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The Effects of a Multicomponent Reading Intervention and a No Treatment Comparison on the Reading Comprehension of Adolescent Students who are Adequate Word Readers and Low in Reading Comprehension

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by

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DEDICATION

This dissertation is dedicated to two important people in my life. My grandmother, Mabel J. Delzell (RIP) in appreciation of all she taught me about the importance of education and hard work. Second, my doctor of Chinese medicine, Jerry Kwok, in appreciation of all he taught me about the importance of having a still mind, and different ways to experience the light that represents spirituality.

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The Effects of a Multicomponent Reading Intervention and a No Treatment Comparison on the Reading Comprehension of Adolescent Students who are Adequate Word Readers and Low in Reading Comprehension

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The University of Texas at Austin, 2012

Supervisor: Sharon Vaughn

This experimental study was conducted to examine the effectiveness of multicomponent reading intervention and a no treatment comparison condition on the reading comprehension of adolescent students with adequate word reading and low reading comprehension. The sample consisted of 44 students in 9th grade who were randomly assigned to an intervention treatment offered as an elective course (N=25) or a no treatment comparison (N=19). Reading intervention teachers, trained by experienced research staff provided instruction for 90-min sessions two to three times per week during for approximately 80 sessions.

Treatment effects for each outcome measure were estimated using analysis of covariance (ANCOVA). Results indicate no statistically significant differences between conditions. Effects, which were calculated with partial eta squared (η^2), ranged from -.26 to .23 with two of the three measures favoring the treatment condition. Three separate repeated measure of analysis of variance (RM-ANCOVAs) were conducted using the Kaufmann Brief Intelligence Test (KBIT) as a covariate for the following measures: (1) Woodcock Johnson Passage Comprehension subtest (WJIII-PC); (2) Test of Sentence

Reading Efficiency (TOSRE); (3) Gates MacGinitie Reading test (GM-RT). An additional ANCOVA was conducted for the GM-RT using the pretest scores from the GM-RT as a covariate. Results indicate that the treatment condition was not favorable to a no treatment comparison for students with adequate word reading and low comprehension. More research into ways to make reading comprehension instruction more effective for Adolescent students with low reading comprehension is warranted.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

According to the Nation's Report Card, 68% of all eighth-grade students performed below the proficient level in 2009 and 92% of students with disabilities performed below the proficient level, on tests of reading administered by the National Assessment of Educational Progress (http://nationsreportcard.gov/reading_2009). Other reports have indicated that approximately 8 million adolescents in the United States lack the reading skills necessary to respond to the requirements set forth in secondary schools and the workforce (Adelman, 2006; Hock & Deschler, 2003; Kamil, 2003). More specifically, a previous study conducted by Hock et al. (2009) identified specific skill deficits related to reading comprehension for struggling adolescent readers.

The goal of comprehending text can be particularly challenging for older, struggling readers (Edmonds et al., 2009). Adolescents with reading difficulties struggle with understanding text for a variety of reasons, many of which involve problems pertaining to (a) decoding words, (b) fluency, (c) understanding the meanings of words (vocabulary), (d) relating content to prior knowledge, (e) applying comprehension strategies, and (f) monitoring understanding (National Institute for Literacy, 2001; RAND Reading Study Group, 2002).

The tasks of understanding, summarizing, and learning from complex reading material become increasingly difficult in high school (Gardill & Jitendra, 1999). Reading comprehension is a skill that requires students to read and interact with text, and extract meaning from stories or passages (Honig, Diamond, Cole, & Gutlohn, 2008). Adolescent

students who have not learned to read strategically or purposefully by the sixth grade (Ivey, 1999) are particularly vulnerable to the challenges of reading for understanding.

Furthermore, many secondary teachers assume that students who can read fluently are also able to understand and learn from text (Edmonds et al., 2009). However, many students move from elementary to secondary grades with adequate levels of decoding and fluency, yet still struggle to comprehend text (Brown, 2002; Greanleaf, Jimenez, & Roller, 2002; Greenleaf, Schoenbach, Cziko, & Mueller, 2001; Wilhelm, 2008). This is an interesting problem worthy of further investigation, considering that reading interventions in the primary grades tend to focus on decoding and fluency.

THE SECONDARY STRUGGLING READER

Two published syntheses of reading instruction have addressed the impact of interventions for older students with reading difficulties (Edmonds et al., 2009; Scammacca et al., 2007). A meta-analysis conducted by Edmonds et al. examined reading comprehension outcomes for 13 studies in which instruction in decoding, fluency, vocabulary, or comprehension was provided to students in Grades 6 through 12. The findings indicated an overall mean weighted effect size in the moderate range, favoring students in the treatment conditions. Multicomponent reading interventions compared to comparison conditions were shown to be effective (ES = 0.72) with regard to reading comprehension outcomes for students with reading difficulties. Targeted reading interventions in comprehension, multiple reading components, and word-reading strategies were identified as promising practices. Furthermore, Edmonds et al. concluded from the synthesis that adolescent students with reading difficulties could improve their reading comprehension when taught reading comprehension practices.

Scammacca et al. (2007) conducted a meta-analysis of 31 studies in which instruction in decoding, fluency, vocabulary, and comprehension was provided to struggling readers in Grades 4 through 12. All reading-related outcomes were examined. The findings indicated an overall mean weighted effect size in the high range, and multicomponent reading interventions were shown to be effective (ES = 0.56) versus comparison conditions on all reading-related outcomes.

The majority of studies included in Edmonds et al. (2009) and Scammacca et al. (2007) used researcher-developed measures. Researcher-developed outcomes are consistently associated with larger effect sizes and do not have the same rigor with respect to reliability and validity as standardized measures (Swanson, Hoskyn, & Lee, 1999). In some cases, researcher-developed measures are highly proximal to treatments (Weisz, Weiss, Han, Granger, & Morton, 1995), which may be an indication of targeted effects. While the results of both syntheses are encouraging, the use of researcher-developed measures should be considered when interpreting the results of intervention studies. Several key components of effective reading comprehension instruction, such as vocabulary instruction, strategy instruction, and text selection, have been documented.

Vocabulary and reading comprehension

There is an accepted relationship between vocabulary development and reading comprehension (Anderson & Freebody, 1981; Mezynski, 1983). However, accurately separating the processes of vocabulary learning and comprehension is difficult if not impossible (http://www.nichd.nih.gov/publications/nrp/findings.cfm). Previous studies of vocabulary interventions and outcomes associated with comprehension indicate mixed results. Some studies provide evidence in support of vocabulary instruction and

corresponding improvements in comprehension (e.g., Beck, Perfetti, & McKeown, 1982; Kameenui, Carnine, & Freschi, 1982), whereas the results of other studies have not indicated positive effects for comprehension outcomes (e.g., Pany & Jenkins, 1982; Wilson, 1986).

Despite conflicting results from previous research, Chall and Jacobs (2003) concluded that a decline in the acquisition of word meanings could lead to difficulties in text comprehension for students as they enter high school. A body of research has identified effective instructional strategies for vocabulary development, such as active discussion, word analysis, simplified definitions, and contextual information about words (Beck & McKeown, 2007; Beck et al., 1982).

Strategy Instruction

Strategy instruction in comprehension is imperative for helping students understand the purpose of reading and for equipping them with the practical skills that are necessary to understand text (Gersten, Fuchs, Williams, & Baker, 2001; Honig et al. 2008). Although educators may agree that understanding written material is the goal of reading (Edmonds et al., 2009; Gajria, Jitendra, Sood, & Sacks, 2007; Honig et al., 2008), the statistics previously cited underscore the fact that vocabulary acquisition and use of comprehension strategies are difficult for many high school students.

Text Difficulty

Complicating the comprehension difficulties of adolescent struggling readers even further, textbooks in high school become a primary source of content knowledge, as students are required to learn content through extensive reading, rather than discussion or lecture. Textbooks with high-readability expository text are potentially less engaging

(Jitendra, Nolet, Xin, et al., 2001) and often lack adequate explanations of key concepts while assuming a high degree of background and vocabulary knowledge (Beck, McKeown, & Gromoll, 1989; Short, 1994). High school students are expected to read greater amounts of information across subject areas compared with students in the upper elementary grades (Gajria et al., 2007).

REMEDIATING READING DIFFICULTIES FOR SECONDARY STUDENTS

Through funding from the National Institute of Child Health and Human Development (NICHD), a team of researchers conducted a 3-year study of interventions with secondary students with reading difficulties (Vaughn et al., 2010; Vaughn, Wexler, Leroux et al., 2010; Vaughn et al., 2011). This large-scale implementation of a response-to-intervention (RTI) model included tiered interventions with varying degrees of intensity based on initial screening measures and students' response to intervention. Both a standardized protocol treatment and individualized treatment were used as part of intensive reading interventions over the course of the study. The sample included students with difficulties in all the major components of reading—decoding, fluency, vocabulary, and comprehension—who continued to perform poorly on the reading test of the high-stakes state assessment. Instruction targeted the students' specific reading deficits, based on assessment and progress-monitoring data.

After the first year (Vaughn et al., 2008), students in the treatment condition outperformed students in the control condition on several reading measures, including word attack, passage comprehension, and phonemic decoding; however, the gains were small (median d = +0.16). During the second year (Vaughn et al., 2010), a similar trend continued, with students in the treatment condition outperforming students in the control

condition with small gains (median d = +0.23). However, after the third year of the study (Vaughn et al., 2011), students in the treatment demonstrated statistically significantly higher scores than students in the control condition on reading comprehension (ES = 1.20).

This finding must be interpreted with caution because the large difference found between the groups was caused by students in the control condition exhibiting a substantial decline in reading performance over the course of the 3 years. Furthermore, while students in the reading treatment condition maintained particular levels of reading achievement, they continued to be poor readers. In other words, there was no acceleration of reading achievement; achievement for students in the treatment condition remained the same when compared to that of their typically achieving peers.

The findings from the NICHD study point to the need to continue to refine and further develop targeted interventions for adolescents with reading difficulties. NICHD study findings indicated that reading interventions that were focused on all areas of reading instruction (decoding, fluency, vocabulary, and comprehension) did make a difference, as evidenced by students' maintaining their reading levels. However, the findings also indicated a need for further investigation to identify curricular and instructional approaches that would increase the intensity of interventions. One possibility is to identify participants with more specific intervention needs, rather than difficulty in all major components of reading. To this end, there is little known about appropriate interventions for secondary students who show adequate levels of word reading yet continue to have reading difficulties related to vocabulary and comprehension outcomes.

Reading comprehension is a complex process made up of many interrelated subprocesses (Just & Carpenter, 1987; Perfetti, 1985) including the ability to recognize words and strings of words and associate them with concepts stored in memory, and to draw inferences by connecting prior knowledge to what is being read. To support the development of this complex process of reading comprehension, interventions that help develop the underlying subprocesses need to be implemented via targeted components of instruction. With this in mind, the use of reading interventions that target vocabulary and comprehension for secondary students with reading difficulties requires further investigation.

Statement of Purpose and Research Question

The No Child Left Behind Act (see http://ed.gov/nclb/landing.jhtml) and the Individuals With Disabilities Education Act of 2004 (see www.idea.ed.gov/) have brought reading research for struggling readers in the secondary grades to the forefront. Because schools are required to apply evidence-based teaching methods, there is a need to understand these practices, to inform and improve vocabulary and reading comprehension instruction for adolescents with reading difficulties.

The purpose of this study was to examine the effectiveness of a reading intervention for ninth-grade students demonstrating adequate word-reading ability but specific deficits in comprehension. Specifically, this study addressed the following research question: To what extent does a multicomponent reading intervention with

adolescent students who are adequate word readers and low in reading comprehension impact reading comprehension outcomes?

Chapter 2: Review of Literature

The purpose of this chapter is to provide an overview of the educational research findings for vocabulary and reading comprehension interventions, and to review a series of reading intervention studies that help illustrate the need for the proposed study.

SYNTHESIS OF LITERATURE – VOCABULARY AND READING COMPREHENSION INTERVENTIONS

A synthesis of the literature was conducted to examine the characteristics of vocabulary and reading comprehension interventions for struggling readers in Grades 6 through 9. A four-step process was used to conduct a comprehensive search of intervention studies. First, electronic searches of ERIC and PsycINFO databases were completed to locate studies published in peer-reviewed journals between 1979 and 2011. Every combination of the descriptors or root words of those descriptors (reading, reading comprehension, vocabulary, word meaning, middle-school, middle grades, junior high, LD, learning disab*, struggling readers, poor readers, reading difficulties, reading strategies, reading disab*, intervention was used to maximize the articles located from the electronic search. Second, abstracts were searched to determine whether they met the synthesis criteria as described in the next paragraph. Third, reference chasing from previously published syntheses for Grades 6 through 12 reading comprehension outcomes for students with LD (Edmonds et al., 2009; Elleman, Lindo, Morphy, & Compton, 2009;

Gajria et al., 2007; Scammacca et al., 2007) was reviewed to ensure that all studies were identified. Fourth, a hand search of four major journals— Exceptional Children, Journal of Learning Disabilities, Learning Disability Quarterly, and Reading and Writing—was completed for volumes starting in 2007 and going through 2009. These journals were selected because they represented the prominent journals in the field of LD, with an emphasis on reading, and were journals that previous syntheses identified as containing research articles.

Studies were selected based on the following criteria:

1. Participating students were in Grades 6 through 9 (ages 12–15). Studies were also included if the study disaggregated data for any student(s) who fell in this grade or age range.
2. Participants were identified as having a learning disability or reading difficulties or being at-risk readers or poor readers. Studies were included if a minimum of 50% of the participants met the grade or age range and were identified with difficulties in reading.
3. Only studies that included reading comprehension and/or vocabulary as the treatment focus were included. Studies that included other areas of reading instruction, such as phonemic awareness, phonics, or fluency, as part of the treatment were excluded (e.g., Bryant et al., 2000).

4. The studies included experimental, quasi-experimental, and single-subject designs. The studies had to show evidence of a control/comparison group within the design to be included.
5. The language of instruction was English, and articles were published in English.
6. Studies needed to include a dependent measure of reading comprehension; if studies had only listening comprehension or content learning as the outcome measure, they were excluded (e.g., DiCecco & Gleason, 2002; Wilder & Williams, 2001; Williams, Brown, Silverstein, & DeCani, 1994).

An extensive coding sheet (see Appendix A) was adapted from a previous synthesis (Edmonds et al., 2009) and included elements specified in the *What Works Clearinghouse Design and Implementation Assessment Device* (U.S. Department of Education, 2008). The code sheet was used to organize the following essential information: (a) participants, (b) methodology, (c) intervention and comparison information, (d) clarity of causal inference, (e) measures, and (f) findings. The code sheet used a combination of forced-choice items (e.g., research design, assignment method, fidelity of implementation), open-ended items (e.g., age as described in text, duration of intervention, selection criteria), and a written description of the treatment condition.

The author coded each article and then double-checked the coding against the article a second time. Once the coding had been completed, the studies were summarized in a table format. Table 2.1 provides a summary of treatment-comparison and single-subject study features. Table 2.2 provides a summary of the measures and outcomes.

Effect sizes for comprehension outcomes were calculated for treatment-comparison studies that provided adequate statistical information. The effect sizes were calculated using a formula that also accounts for pretest differences, following the trend of recently published reading syntheses (Edmonds et al., 2009; Wanzek, Wexler, Vaughn, & Ciullo, 2010. Hedges' *g* was the formula used in this review (Hedges & Olkin, 1985). This is calculated as the difference between the mean posttest score of the treatment group minus the mean pretest score of the treatment group divided by the standard deviation of the control group on pretest. From this, subtract the mean posttest score of the control group, minus the mean pretest score of the control group divided by the standard deviation of the control group on pretest. Eighteen of the studies used a treatment-comparison design (14 experimental and 4 quasi-experimental). Data for calculation of effect sizes were available in all 18 studies.

Results from single-subject studies were determined by calculating the percentage of nonoverlapping data (PND). This procedure requires identifying the points of performance that are above the highest data point existing in the baseline condition. The total number of treatment sessions is divided by the number of data points above the highest baseline point (Scruggs & Mastropieri, 1998), which identifies a PND score. The interpretation of PND is as follows: (a) Greater than 90% of PND = very effective treatment, (b) 70% to 90% of PND = effective treatment, (c) 50% to 70% of PND = questionable treatment, and (d) below 50% of PND = ineffective (Scruggs & Mastropieri,

1998). PND was calculated for all reading measures that included a line graph to display results.

Studies describing vocabulary and reading comprehension interventions

A total of 1,088 students were represented, including 647 students identified as LD. Ninety-four students were identified as poor readers. The number of treatment sessions ranged from 1 to 48 (M = 15 sessions). Twenty studies reported session durations ranging from 20 min to 120 min (M = 45 min). Researchers implemented treatments in the majority of studies (n = 16). Five of the studies reported fidelity of treatment.

Of the 23 studies coded for this synthesis, 19 identified students as LD. For 13 of those 19 studies, the authors reported information regarding the criteria that were applied for identifying the students as LD; six studies did not report how students were identified (Bos & Anders, 1992; Gajria & Salvia, 1992; Harris, Schumaker, & Deschler, 2011; Jitendra, Hoppes, & Xin, 2000; Kim et al., 2006; Mastropieri et al., 1996). Four of the 13 studies reported that classification was based on state or federal guidelines (Fore, Boon, & Lowrie, 2007; Jitendra et al., 1998; Lauterbach & Bender, 1995; Malone & Mastropieri, 1992). Nine of the studies cited a discrepancy model, which uses a comparison of reading achievement to IQ or ability, as the method for reporting how students were identified as LD (Bakken & Mastropieri, & Scruggs, 1997; Bos & Anders, 1990; Boyle, 1996; Brailsford et al., 1984; Gardill & Jitendra, 1999; Graves & Levin,

1989; Klingner & Vaughn, 1996; Snider, 1989; Wong & Jones, 1982). Two studies identified students as poor readers via teacher reports and pre-established cut scores on standardized assessments of reading (Graham & Wong, 1993; Vaughn, Klingner et al., 2011). One study used students identified to receive special education services as the criterion (Berkeley, Mastropieri, & Scruggs, 2011).

Eighteen studies reported information related to reading material, which was described by the authors as encompassing the following: fluency passages, remedial reading comprehension materials, expository text, social studies text, narrative text, and decodable text. A wide range of text readability was reported for eight of the studies. Nine studies reported readability levels of text that ranged from 2nd to 9th grade (M = 5.0 grade equivalency [GE]). Summaries of the study features are presented in Table 2.1.

Previous research has differentiated between researcher-developed and standardized measures (Edmonds et al., 2009; Scammacca et al., 2007). Researcher-developed outcomes are consistently associated with larger effect sizes and may not have the same rigor as standardized measures with respect to reliability and validity (Swanson, Hoskyn, & Lee, 1999). In some cases, researcher-developed measures are highly proximal to treatments (Weisz, Weiss, Granger, Morton & Morton, 1995), which may be an indication of target effects. Summaries of the study measures and outcomes are presented in Table 2.2.

Treatment conditions included strategy instruction, mapping, mnemonics, questioning, reviewing, and self-monitoring procedures. A review of the studies revealed

25 separate treatment conditions. On the basis of the description of the interventions provided by the authors, the treatments were organized into the following sections: summarization/main idea, summarization/main idea with self-monitoring strategies, multiple strategy interventions, other comprehension treatments, and vocabulary treatments. The majority of outcome measures were researcher developed (n = 21); five studies used standardized measures of reading comprehension.

Summarization/main idea

A summary or main idea strategy teaches students to capture the most important information about the overall idea of a paragraph or a body of text, and to express this information in a condensed form. Four studies focused on summarizing or identifying main ideas (Bakken, Mastropieri, & Scruggs, 1997; Gajria & Salvia, 1992; Malone & Mastropieri, 1992; Mastropieri et al., 1996). The studies used researcher-developed assessments designed to measure the specific skills taught during the intervention.

Gajria and Salvia (1992) provided a treatment condition in which students were taught text summarization through explicit modeling, guided practice, independent practice, and feedback, with an emphasis on mastery learning. Over the course of the treatment, responsibility for learning shifted from the instructor to the students. As outlined by Brown and Day (1983), students were taught five summarization rules: (a) superordination, (b) deletion of redundant information, (c) selection, (d) invention, and (e) deletion of unimportant information. The control condition was not reported. The

students in the treatment condition outperformed the students in the control condition on researcher-developed measures assessing main ideas, cause and effect, and inferences (ES = 6.66), and on measures of factual questions (ES = 1.98).

In a single-subject study by Lauterbach and Bender (1995), students were taught the RAP strategy: Students *read* a paragraph, *asked* themselves to identify the main idea and two supporting details, and *put* the main idea and details into their own words. Grade-level expository text passages were used for the treatment. After establishing a baseline condition, students were taught how the RAP strategy worked for 3 days before being asked to use the strategy independently and record their answers. Following the treatment, two researcher-developed measures were administered. The first measure was the percentage correct of paraphrasing responses after students read passages that were five paragraphs in length. The second measure was three 10-question multiple-choice tests designed to ascertain the student's knowledge of the main ideas and supporting details. The tests used passages at the 7th-, 8th-, and 9th-grade reading levels. PND performance for paraphrasing measures indicated that all three students demonstrated results associated with an effective treatment, with PND scores of 91%, 92%, and 100%. On the multiple-choice measure, the results were mixed. One student's average PND was in the effective range (100%), while the other two students' average PNDs were in the ineffective range (22% and 0%).

For one of the two treatments provided in Malone and Mastropieri (1992), students were taught a summarization strategy that utilized self-questioning to develop

summary statements about the most important information. Below-grade-level reading materials from the *Reading for Concepts* series were used for the treatment. Intervention training required answering two questions after reading each paragraph: "Who or what is the paragraph about?" "What is happening to them?" Students used the answers to these questions to form summary statements. The control condition involved reading stories, answering questions, and practicing difficult words. Researcher-developed measures included posttests of training, near-transfer, and far-transfer measures. Passages from *Reading for Concepts* were used for the posttests of training and near-transfer measures. The posttest of the training measure was formatted with lines for summary statements to be written, while the near-transfer measure was not altered in any way. The far-transfer measure was a social studies passage similar to the other passages in terms of length and text difficulty. All three measures were administered the day after the treatment ended. Findings indicated that the students who were taught the summarization strategy outperformed the students in the control condition ($M = 1.77$).

Mastropieri et al. (1996) also investigated the use of questioning through student and teacher discussion to enhance thinking skills and reflection about text meaning. After each sentence, the researcher asked questions that were designed to elicit reflection and clarify meaning (e.g., "Why does that make sense?") Corrective feedback was provided for incorrect answers until mastery of the concept was achieved. In the comparison condition, researchers encouraged students to remember facts. The dependent measure included a combination of fact recall and explanations about the text.

For the fact recall measure, differences were not significant (ES = 0.05); however, on the explanations recall measure, the treatment condition outperformed the control condition (ES = 0.89).

Bakken et al. (1997) compared the effects of two treatment conditions and a comparison condition. One treatment was a text-based strategy, and the other was a paragraph-restatement strategy. The text-based strategy taught students to identify three different passage types: main idea, list, and order. Then, a main idea strategy was taught using a two-step process: The students were asked to (1) read, identify, and underline the main idea, and (2) identify supporting evidence and summarize the main idea in writing using their own words. For the paragraph-restatement strategy, students wrote brief summaries in their own words after reading. Students then studied the summaries, to help them remember what the passage was about. Students in the comparison condition participated in a traditional instruction strategy whereby they read passages and answered questions related to the information. Grade-level science readings at an eighth-grade level were used.

Three researcher-developed measures were administered: immediate recall, delayed recall, and transfer recall. The immediate recall and delayed recall measures used science passages equivalent to the passages used during the treatment. The transfer recall measure used social studies passages. The immediate recall measure was administered the day after the treatment, whereas the delayed recall and transfer recall measures occurred 2 days after treatment. Students were reminded of the strategy they

had learned, asked to read the passage, given 4 min to study content, and then provided free-recall prompts by testers. Responses were scored for central (main ideas) and incidental (extra but still important) idea units by raters unaware of the treatments. Students in the text-based strategy outperformed students in the comparison condition on the immediate recall measure (ES = 2.22) and on the delayed recall and transfer recall measures (mean ES = 2.83). Students who received the paragraph-restatement strategy also outperformed students in the comparison condition on the immediate recall measure (ES = 0.71) and on the delayed recall and transfer recall measures (mean ES = 1.36). Students receiving the text-based strategy outperformed those who received the paragraph-restatement strategy on the immediate recall measure (ES = 0.49) and the delayed recall and transfer measures (mean ES = 0.84).

Summarization/main idea and self-monitoring

Self-monitoring is defined as occurring when an individual assesses whether or not a targeted behavior has occurred and then records the results (Shapiro & Cole, 1994). Five experimental studies (Boyle, 1996; Graves & Levin, 1989; Jitendra, Hoppes, & Xin, 2000; Malone & Mastropieri, 1992; Wong & Jones, 1982) and two single-subject studies (Gardill & Jitendra, 1999; Jitendra, Cole, Hoppes, & Wilson, 1998) included a main idea treatment with some form of self-monitoring. Self-monitoring techniques included checklists, forms, cue cards, story maps, question generation, and interactive images.

One treatment condition in Malone and Mastropieri (1992) utilized the generation of summary statements described previously (summarization/main idea) and added a self-monitoring component. Students were taught to use a self-monitoring card that included steps in the summarization procedure, which students checked off after completion. For example, after identifying the important "who or what" of the paragraph, students placed a checkmark showing completion of that step. Students in the summarization with self-monitoring treatment outperformed students in the control condition (mean ES = 1.87). Across treatment conditions, students in the summarization with self-monitoring condition outperformed students in the summarization-only condition (mean ES = 0.35)

Wong and Jones (1982) taught main idea identification through the use of a self-questioning treatment. The intervention consisted of 3 days of main idea instruction, or until students met a mastery criterion of 80% on tests administered at the end of the session. Then students were provided 2 days of self-questioning instruction consisting of the following steps: (a) what are you studying the passage for? (b) find and underline the main ideas in the paragraph; (c) think of a question about the main idea; (d) answer your question; and (e) look back at your questions and answers to learn more information. The comparison condition also received the main idea instruction, in an attempt to isolate the effects of the self-questioning strategy. Additional instruction for students in the comparison condition included assistance with decoding and vocabulary; and the students were asked to assess the quality of the text (how well it was written) after reading. Students in the self-questioning condition outperformed students in the comparison

condition at posttest on the researcher-developed measure of comprehension questions about test passages (ES = 0.56).

An experimental study by Graves and Levin (1989) investigated main idea generation through self-questioning in combination with a self-monitoring tool compared to a treatment utilizing a mnemonic device. The comparison condition used scripted main idea lessons. Below-grade-level reading material at the second- to third-grade level was used for the treatment. A researcher-developed measure of main idea identification assessed treatment impact. In the main idea treatment, students were taught to ask themselves if they had identified the main idea after reading the passage; they then reread the passage and recorded their monitoring by placing checkmarks on a 3 x 5 card. Questions, feedback, and correction procedures were also part of the main idea treatment. In the mnemonic treatment condition, students were taught to identify main ideas through mnemonic devices utilizing key words in the story title and illustrations and how those illustrations related to the main idea. Key words were provided, and students developed illustrations depicting story action to assist in recall of main ideas. For example, the key word *pot* was used as a mnemonic device for a story about the Potawatomi Indians who were forced from their land by settlers. The story action included throwing pots to try and stop settlers. According to results of the main idea identification measure, both treatment conditions outperformed the comparison condition, main idea (ES = 2.55) and mnemonic (ES = 1.41). A comparison of the treatments was in favor of the main idea condition versus the mnemonic condition (ES = 1.13).

Boyle (1996) compared two conditions: cognitive mapping through the use of a mnemonic device and a comparison condition that included notes and outlines of passages. In the cognitive mapping condition, the mnemonic TRAVEL (Topic, Read, Ask, Verify, Examine, Link) provided a sequential process for developing cognitive maps. The cognitive mapping component taught students to write key ideas for each step in the TRAVEL procedure. The researcher implemented the treatment condition; the study did not report who implemented the comparison condition. Grade-level and below-grade-level reading materials were used for the treatment condition. One standardized reading measure, the *Formal Reading Inventory* (FRI), and researcher-developed curriculum based measures (CBMs) were used as dependent measures. The CBMs included literal and inferential measures for below-grade-level and on-grade-level passages. Results of the FRI indicated a small to medium effect in favor of the treatment condition (ES = 0.33). Researcher-developed measures also favored the treatment condition (mean ES = 0.86).

Jitendra et al. (2000) compared the effects of main idea and self-monitoring strategies to a comparison condition that stressed methodical decoding and comprehension exercises. The main idea strategy asked students to find and produce the main idea of the text, which entailed identifying the most important person, thing, or action. In addition, students were taught to identify where, why, when, and how information related to the passage. A four-step self-monitoring strategy was integrated throughout the instruction: (a) read, (b) recall the strategy from the prompt card, (c) use

the strategy, and (d) identify or write the main idea. Reading materials included a below-grade-level (mean GE = 2.88) main idea reading comprehension program. Researcher-developed measures assessed main idea comprehension. Students were administered three 12-item measures (18 multiple-choice items and 18 short answer items) that required them to identify the main idea. The first measure, referred to as "training," included items that were similar to the training materials and that were designed to measure utilization of the skills taught during the treatment. The second measure, referred to as "near transfer," included items that were based on a narrative text from a basal reading series. The remaining measure, "far transfer," included items based on social studies texts and was used to assess far transfer of skills. All three measures were administered immediately after the treatment (posttest) and again after a 6-week delay (delayed posttest). Across all three outcome measures, students in the treatment condition outperformed the comparison condition at posttest (mean ES = 2.15) and delayed posttest (mean ES = 0.76).

Two single-subject studies implemented interventions with main idea and self-monitoring strategies (Gardill & Jitendra, 1999; Jitendra et al., 1998). Both studies utilized scripted lessons and built on previous direct instruction methods (Carnine, Silbert, & Kameenui, 1997). A multiple-baseline study by Gardill and Jitendra (1999) investigated the effectiveness of a story map procedure between a baseline and an independent phase condition. Elements of the story map included story conflict, main characters, setting, story action, and theme. During intervention, instructors provided

extensive modeling and completion of story maps with the students. Gradually, responsibility shifted to the students completing the maps, with less support. Reading material of seventh-grade difficulty was used. The test of story grammar mirrored items listed on the story map previously described. Basal comprehension questions included both literal and inferential questions. All students achieved a PND of 100% on the story grammar measure. These scores are interpreted as reflecting a highly effective treatment (Scruggs & Mastropieri, 1998). However, the basal-comprehension test yielded less impressive PND scores: 10%, 20%, 50%, 67%, 80%, and 100%. Therefore, three of the students' scores in the study were in the range of questionable or "ineffective," according to previously identified PND standards (Scruggs & Mastropieri, 1998). However, it is important to note that for two of the students, several data points were commensurate with the highest baseline point, which does not demonstrate a decrease in performance during the treatment condition.

Jitendra et al. (1998) examined main idea, summarization, and self-monitoring with four sixth-grade students through a multiple-probe design across participants. One student did not receive instruction and served as the control by staying in a probe condition that consisted of reading passages and answering main idea comprehension questions. The main idea intervention included a series of seven lessons that progressed from easier to more difficult tasks. In the self-monitoring phase, students were taught to use prompt cards that outlined the use of the main idea strategies previously taught. PND performance for narrative comprehension probes indicated that two out of the three

students demonstrated results associated with an effective treatment, with PND scores of 85%, 85%, and 33%. On the expository comprehension probes, the results were less positive. One student's PND was in the effective range (PND = 71%), while the other two students improved when compared to baseline but the results were less robust, with PNDs of 42% and 50%.

Multiple-strategy interventions

Five studies examined the effects of multiple-strategy reading interventions (Alfassi, 1998; Berkeley, Mastropieri, & Scruggs, 2011; Kim et al., 2006; Klingner & Vaughn, 1996; Vaughn, Klingner et al., 2011), which are interventions that use three or more reading strategies. Three of the studies used researcher-developed measures and standardized measures (Kim et al., 2006; Klingner & Vaughn, 1996; Vaughn, Klingner et al., 2011).

Both Alfassi (1998) and Klingner and Vaughn (1996) utilized a reciprocal teaching model (Palincsar & Brown, 1984), which involves previewing, clarifying, generating questions, and summarizing. During the early stages of instruction, the teacher models strategy use and assumes responsibility for the majority of instruction. Over time the teacher relinquishes control of instruction and begins to provide guided feedback. During the guided feedback, the teacher encourages students to participate in discussion about the text by (a) elaborating on other students' summaries, (b) suggesting

additional questions, (c) commenting on predictions, (d) requesting clarification of misunderstood material, and (e) helping to resolve misunderstood material.

Alfassi (1998) compared a reciprocal teaching treatment to a traditional skills-acquisition method for students with adequate decoding skills and low reading comprehension who were placed in remedial reading classes. Ninth-grade expository text passages were used for both conditions. Findings from the researcher-developed measure favored the reciprocal teaching treatment (T1 vs. C, ES = 0.98). However, results from the standardized reading and vocabulary tests were not significant.

Klingner and Vaughn (1996) compared the reciprocal teaching model with different student grouping methods: peer tutoring and cooperative groups. Student participants were identified with LD and as English language learners. Grade-level social studies texts were used for both treatment conditions. Results were mixed on outcome measures based on the different grouping methods. Findings from the Gates-MacGinitie Reading Test (GM-RT) (MacGinitie & MacGinitie, 1989) indicated that students who received reciprocal teaching combined with cooperative groups outperformed students who received reciprocal teaching combined with peer tutoring (T2 vs. T1, ES = 1.42). However, outcomes on the researcher-developed measure of comprehension were in favor of the peer tutoring learning treatment (T2 vs. T1, ES = - 0.35).

Using a different multiple-strategy reading intervention, Kim et al. (2006) examined the effects of a Computer-Assisted Collaborative Strategic Reading (CACSR) program on reading outcomes for students with LD. The comparison condition targeted

fluency, vocabulary, and some comprehension instruction (Kim et al., 2006). The CACSR program teaches students the following four strategies: preview, click and clunk, get the gist, and wrap-up. These strategies were modified from reciprocal teaching and make up the strategies used in Collaborative Strategic Reading (CSR; Klingner, & Vaughn, 1999; Klingner, Vaughn, & Schumm, 1998). Independent-reading-level material and fourth-grade reading material were used for the treatment condition. First the strategies were taught in different sections of the computer program, and then the strategies were applied to assist with comprehension of text. Students worked in pairs on the CACSR program and received instruction from a researcher and teacher based on feedback provided by the CACSR program. A standardized measure, the *Woodcock Reading Mastery Test–Revised* Passage Comprehension subtest (WRMT-PC), was administered. Effect sizes were medium for the WRMT-PC (ES = 0.40). Researcher-developed measures focused on students' ability to write main ideas and ask questions about passages at their instructional level and passages at the fourth-grade level. Effect sizes for both measures were medium to large in favor of the treatment condition (main idea: mean ES = 0.84; questions: mean ES = 1.19).

Through a large-scale randomized control trial study, Vaughn, Klingner, et al. (2011) further investigated the use of CSR compared to a control condition for both general education students and students with reading difficulties. Teachers modeled the four strategies of CSR through think-alouds and guided practice with feedback. Students with reading difficulties received additional brief lessons for practice and review. The

findings described pertain to the subgroup of students with reading difficulties, defined as scoring 1 standard deviation below the norm on the *Test of Word Reading Efficiency* (TOWRE). Three standardized measures of reading were administered as pre/post assessments to students in the CSR treatment and control condition: the GM-RT, AIMS Web Reading CBM, and the *Test of Silent Reading Efficiency and Comprehension* (TOSREC). Findings on all three standardized measures indicated small to moderate effect sizes in favor of the CSR treatment compared to the control condition (Gates: ES = 0.36; AIMS Web: ES = 0.03; TOSREC: ES= 0.16).

Berkeley, Mastropieri, and Scruggs (2011) investigated two different treatment conditions to a comparison condition. The first treatment, a reading comprehension strategy (RCS), consisted of six strategies: setting a purpose, previewing, activating background knowledge, self-questioning, summarizing, and strategy monitoring. Students read passages while working with worksheets that presented one of the strategies. The second treatment was the RCS intervention plus "attributional retraining" (AR), which consisted of addressing concepts related to overcoming negative self-talk about reading comprehension competence. Students in the comparison condition participated in the Read Naturally program, which focused on fluency followed by reading comprehension through explicit repeated reading practice. Students in both the RCS and RCS+AR treatment performed better than students in the comparison condition on a researcher-developed measure of summarization (T1 vs. C, ES = 1.40; T2 vs. C, ES = 0.92; T1 vs. T2, ES = -0.09).

Other comprehension treatments

Graham and Wong (1983) investigated two treatments, a didactic teaching treatment and a self-instructional treatment, and compared them to a comparison condition. Both treatment conditions utilized the 3H strategy, which was a modified version of the question–answer relationship (QAR) strategy (Raphael & Pearson, l985). The 3H strategy taught students classification of different question types: text explicit ("Here"), text implicit ("Hidden"), or script implicit ("in my Head"). The treatment condition's instructional approach was different. The didactic treatment used a prompt card of the 3H strategy; students took turns reading out loud, predicted question types, and answered comprehension questions. In the self-instructional treatment, researchers asked students to think aloud and taught them to ask themselves three questions: (1) How will I answer this question? (2) Where is the answer to this question found? and (3) Is my answer correct? Questions were designed to remind students to check their work. Students in the comparison condition took turns reading out loud and then answered comprehension questions independently of each other. Grade-level curriculum materials were used for all conditions.

Three researcher-developed measures that consisted of the same materials used for the treatment were administered: posttest, Maintenance 1, and Maintenance 2. All measures contained two passages followed by comprehension questions. The posttest was administered the day after the treatment. The first maintenance test was administered 1 week after treatment and the second posttest, 2 weeks after treatment.

Across all three measures, students in both treatments outperformed students in the control condition. Initially, students in the self-instructional treatment outperformed those in the didactic treatment (posttest, T1 vs. T2, ES = - 0.29). However, on both maintenance measures, results indicated the didactic treatment to be more robust than the self-instructional treatment over time (Maintenance 1, T1 vs. T2, ES = 0.39; Maintenance 2, T1 vs. T2, ES = 0.90).

Snider (1989) used a design that included a treatment condition that drew heavily on direct instruction, specifically Comprehension B of the *Corrective Reading Program* (Engelmann, Becker, Hanner, & Johnson, 1978) and *Reading Mastery* (Engelmann & Hanner, 1983). Intervention lessons focused on factual content and consisted of structured oral presentation, application of the information, and written exercises for independent practice. In the comparison condition, students read and answered questions from literature books. The researcher-developed measure of explicit and implicit text items indicated that students in the treatment condition outperformed students in the control condition (ES = 1.57).

Brailsford et al. (1984) examined a treatment that focused on developing strategic behaviors related to simultaneous and successive synthesis. Students were taught to synthesize parts into wholes, to make predictions, and to sequence randomly chosen numbers within cells of a matrix. Students verbalized their actions throughout the strategy training. The comparison condition included remedial comprehension instruction and word analysis. Students in the treatment condition outperformed those in

the control condition on the Standard Reading Inventory (SRI) standardized measure (ES = 0.97).

Vocabulary treatments

Four experimental studies and one single-subject study examined vocabulary treatments and assessed their impact on researcher-developed dependent measures of comprehension. Common themes of instruction across the studies included word associations and the use of visuals (e.g., maps, charts) as part of the educational routine. Bos and Anders conducted two experimental studies that explored interventions based on the knowledge hypothesis (Bos & Anders, 1990; Bos & Anders, 1992). The knowledge hypothesis assumes that vocabulary words are representations of underlying concepts in the reader's schemata (Anderson & Freebody, 1981).

Bos and Anders (1990) compared the effects of semantic mapping (SM), semantic feature analysis (SFA), and semantic/syntactic feature analysis (SSFA) to the results of a definition instruction (DI) comparison condition. In the SM condition, students were taught to create a hierarchical relationship map from a vocabulary list. With SFA they were taught how to make relationship predictions from a relationship matrix. In the SSFA condition, students were taught how to make relationship predictions from a relationship matrix (Anders & Bos, 1986; Johnson & Pearson, 1984) and answer predictions from cloze-type sentences written by the researcher. The DI control condition provided direct teaching of simplified definitions, recitation, and memorization.

Science passages at the fifth- and sixth-grade reading levels were used. Researcher-developed measures of comprehension referred to as "posttests" and "follow-up" were administered. Both measures included 15 multiple-choice questions designed to measure students' ability to apply the concepts learned to unique situations and a general understanding of the text. A posttest was administered immediately following the intervention, and the follow-up measure was administered 4 weeks later. Students who participated across the three treatment conditions outperformed students in the comparison condition on the posttest measure (mean ES = 1.32), with findings for the semantic feature analysis treatment being the most robust (ES = 1.46). On the follow-up measure, students across all three treatment conditions continued to outperform students in the comparison condition (mean ES = 0.76). Students in the semantic/syntactic feature analysis treatment (ES = 1.39) outperformed those in the semantic mapping (ES = 0.46) and semantic feature analysis (ES = 0.43) conditions on the follow-up measure.

Bos and Anders (1992) continued to explore vocabulary interventions with variations of treatments related to their 1990 study. Six experiments were conducted, three with junior high students with LD and three with bilingual elementary school students with LD. The experiments took place over three phases. For Phase 1, researchers provided the treatment; in Phase 2, teachers provided the treatment; and in Phase 3, students worked in cooperative groups. In the SM condition, students were taught key vocabulary concepts and made predictions about how those concepts should be arranged to represent relationships. In the SFA condition, students and teachers

completed a relationship chart for vocabulary words in relation to major concepts, judging them as *positive, negative, unrelated*, or *don't know*. The comparison condition consisted of direct teaching of vocabulary words through recitation and memorization of simplified definitions. Social studies and science texts were used for treatment and comparison conditions. Two researcher-developed multiple-choice posttest and follow-up comprehension measures were administered that probed understanding of content and application to novel situations. The posttest measure was administered directly after the treatment, and the follow-up measure, 4 weeks following treatment. Results on the posttest were clearly in favor of the semantic mapping condition over the comparison condition or the semantic feature analysis treatment (T1 vs. C, ES = 2.16; T1 vs. T2, ES = 1.14). However, results from the follow-up measure indicated similar findings for both treatments versus the comparison condition (T1 vs. C, ES = 0.73; T2 vs. C, ES = 0.78).

More recently, an experimental study by Harris, Schumaker, and Deschler (2010) investigated the efficacy of word-mapping vocabulary strategy instruction treatments compared to a control condition in an experimental study. The word-mapping intervention consisted of three phases. In Phase 1, instruction focused on prefixes, suffixes, roots, and word-mapping strategy steps. In Phase 2, the word-mapping strategy steps were reviewed and students practiced using them with target words, with guidance from the instructor. In Phase 3, students practiced the steps with a partner using words on a second list, and then reviewed the word meanings as a whole group. The vocabulary strategy instruction also had three phases. In the first phase, the instructor described and

modeled the steps of the strategy and provided opportunities for individual and group practice using LINCS tables, which are graphic organizers designed to make connections between a word and elements of the text. In Phase 2, the strategy steps were reviewed and LINCS tables made for three to four words per lesson from a vocabulary list through a whole-group guided-practice activity. Students quizzed each other on the words learned that day. In Phase 3, students repeated Phase 2 words on a second word list, working in pairs prior to coming back together as a whole class to share completed LINCS tables. Students in the comparison condition participated in their regular English class. On a researcher-developed measure of word knowledge, students in both treatment conditions outperformed students in the control condition (T1 vs. C, ES = 2.21; T2 vs. C, ES = 2.12) with large effect sizes. The findings pertaining to a second researcher-developed measure of morphology also favored both treatment conditions over the control condition; however, the findings were not as robust (T1 vs. C, ES = 1.32; T2 vs. C, ES = 0.25), with large to moderate effect sizes.

A single-subject study by Fore, Boon, and Lowrie (2007) compared a concept model treatment of vocabulary instruction to a definition model condition. This study, which utilized a multiple-baseline across participants design, focused on the math vocabulary of six seventh-grade students. Elements of the concept model included a concept diagram transparency, vocabulary definitions, discussion, word characteristics, and examples/nonexamples. The teacher facilitated the students' completion of the concept diagram through direct teaching and discussion. During the definition model

condition, students looked up words, wrote definitions, and used the words in sentences. The dependent measure was percentage of vocabulary questions answered correctly. PND scores of 100% for three students demonstrated results associated with very effective treatment, while scores for two students of 83% and 80% demonstrated results associated with effective treatments. A score of 0% for the sixth student indicated that the treatment was ineffective.

READING INTERVENTION RESEARCH

Research on reading interventions with secondary students is limited. However, as mentioned previously, a multiyear, large-scale implementation of response to intervention (RtI) with secondary students that included reading interventions was recently conducted (Vaughn, Cirino et al., 2010; Vaughn, Wexler, Leroux et al., 2011; Vaughn, Wexler, Roberts et al., 2011). The findings from this series of studies, which provided intensive, tiered reading interventions, will help inform directions for future research. Over 3 years, a cohort of students who displayed inadequate responsiveness to intervention, based on repeated failure of the state reading test, continued to receive intensive reading interventions. See Table 2.3 for a summary of the research questions and findings for Years 1 through 3. This review will focus on the secondary and tertiary reading interventions provided, followed by a brief re-summarization of a key finding.

During the first year (Vaughn et al., 2010), students who exhibited risk for reading difficulties were identified for Tier 2 interventions and were randomly assigned

to either a reading intervention provided by the research staff or a comparison condition provided by the school. The intervention consisted of 50 min of daily instruction provided by teachers who were hired and trained by the research staff. That instruction was organized into three phases: (a) word study and fluency, (b) vocabulary and comprehension, and (c) application of reading strategies with expository text. On reading measures of word attack, spelling, passage comprehension, phonemic decoding efficiency, and the state reading test, students who received the reading intervention outperformed students in the comparison condition. However, gains were small (median d = +0.16).

For the second year of the study (Vaughn, Wexler, Leroux et al., 2011), students from the first year who did not pass the state reading exam were identified as minimally responsive and continued to receive a reading intervention (Tier 3). Students from the Year 1 treatment condition were then randomly assigned to either an individualized instructional approach or a standard protocol instructional approach for the Year 2 study. Students from Year 1 in the comparison condition who were identified as minimally responsive remained in their condition and continued to be followed.

For both the individualized and the standardized reading intervention, students were taught the same research-based components of reading instruction (i.e., word study, fluency, vocabulary, and comprehension). In the individualized reading intervention, teachers reviewed and interpreted student data and gathered information using conferencing time to select high-interest text in order to make instructional adjustments.

The standard protocol instructional approach continued to follow the three-phase instructional model of word study fluency, vocabulary and comprehension, and application of reading strategies to expository text. No statistically significant differences were found between the two reading intervention treatments for any students. However, when the results were disaggregated to include only students with LD, students in the standardized treatment outperformed students in the individualized treatment (Vaughn, Wexler, Leroux et al., 2011). When results from the two reading intervention conditions were combined for all students, significant differences were found on reading comprehension outcomes versus outcomes for the comparison condition (median *d* = +0.23).

During the third and final year of the study (Vaughn, Wexler, Roberts et al., 2011), students who were minimally responsive after the first 2 years of receiving reading interventions received another yearlong intensive, individualized reading intervention for 50 min per day. Lessons were planned based on student performance data to address individual needs in phonics, word reading, fluency, vocabulary, and comprehension. The instructional focus of the lessons was based on an analysis of student data. For example, students with below-average word-reading scores were provided more instruction in word study than students with adequate word-reading scores.

As stated previously, results indicated statistically significantly higher scores on word identification (ES = 0.49) and reading comprehension (ES = 1.20) for students in the reading intervention condition than for students in the comparison condition.

However, rather than an acceleration of achievement by students in the treatment condition being the cause of the large effect size, the differences between groups were caused by a decline of scores on nearly all reading measures by students in the control condition. Furthermore, the findings for students who received 3 years of intensive reading interventions do not indicate the level of gains required to close the achievement gap to typically achieving students.

SUMMARY

Findings from the review of literature indicate outcomes largely characterized by medium to large effect sizes derived primarily from researcher-developed comprehension measures. Few studies (n = 6) reported standardized measures of reading comprehension, which yielded, on average, lower effect sizes than researcher-developed measures. These consistently lower outcomes on standardized versus researcher-developed measures have been reported often in research syntheses (e.g., Edmonds et al., 2009; Elleman et al., 2009; Swanson et al., 1999). Typically, more proximal researcher-developed measures can provide indications of whether students in the treatment condition are applying the particular practice they were taught in a specified condition (e.g., writing summaries from text supplied by the researcher); however, they do not yield the same confidence as that derived from more distal measures of reading comprehension, which typically provide better information about technical adequacy and norms (Swanson et al., 1999).

The vast majority of comprehension treatments utilized strategy instruction related to main idea or summarization. Teaching struggling readers instructional practices for reading text, along with identifying the most critical information (i.e., main idea) and how to link main ideas across paragraphs to create summaries, has strong context validity. These tasks correspond well with the type of tasks students perform on high-stakes assessments, such as state-level reading and social studies tests.

Although vocabulary is widely accepted as a necessary component of literacy programming for adolescents (Kamil et al., 2008), only four studies of vocabulary instruction for struggling readers in Grades 6 through 9 were located in the synthesis. Previous reviews have concluded that vocabulary instruction might benefit struggling readers more than average readers (Ellemen et al., 2009). Vocabulary instruction may influence measures of comprehension for struggling readers via increases in knowledge; deficits in background knowledge have been attributed to students with comprehension problems (McNamara & McDaniel, 2004).

The body of literature reviewed in this chapter pertains to student samples with varying difficulties related to reading. As indicated by the review of the NICHD studies, further investigation is needed to identify ways to intensify interventions to assist in closing the achievement gap for secondary students. One potential way is to identify samples that include students with specific needs in vocabulary and reading comprehension. By doing so, researchers have the opportunity to increase the instructional time on these specific areas (word-, phrase-, and passage-level

understanding) by reducing the emphasis on word-study components. The addition of instructional time is considered a practical way to intensify interventions (Vaughn, Wanzek, Murray, & Roberts, 2012). Based on my findings from the review of literature, only one study (Alfassi, 1998) identified a sample of students as adequate word readers and low comprehenders, which clearly indicates that further research is needed to explore the feasibility of this approach as a means to further improve intervention outcomes for adolescent students with reading difficulties.

Table 2.1: Study features

Study	Study design	Participants	Grade	Duration	Reading material	Person implementing
1. Alfassi (1998) *Treatment fidelity* NR	Quasi-experimental Treatment comparison	75 students (Poor comprehenders and adequate decoders)	9th	20 sessions (45 min)	Expository text (GE = 9th)	Teacher
2. Bakken, Mastropieri, & Scruggs (1997) *Treatment fidelity* NR	Random assignment Treatment comparison (Multiple treatments)	54 students (LD) 18 students each for T1, T2, and C.	8th	3 sessions (94 min total)	Expository text (GE = 8th)	Researcher

Table 2.1 (continued)

3. Berkeley, Mastropieri, & Scruggs (2011) *Treatment fidelity* Criteria met 99% –100% of scripted lessons from audio recordings	Random assignment Treatment comparison (two treatments and one comparison)	59 students (SED)	7th, 8th, 9th	12 sessions (3/week; 30 mins)	Social studies (GE = 5th–9th)	Teacher
4. Bos & Anders (1990) *Treatment Fidelity* NR	Random assignment Treatment comparison (three treatments)	61 students (LD)	7th, 8th	8 sessions (7 weeks; 50 min)	Science passages (GE = 5th–6th)	Researcher

Table 2.1 (continued)

5. Bos & Anders (1992) (only junior high students reported) *Treatment fidelity* NR	Quasi-experimental Treatment comparison	Phase 1, 61 students (LD) Phase 2, 53 students (LD) Phase 3, 33 students (LD) 11 students each for T1, T2, and C	Junior high	6 sessions (50 min)	Social studies and science text	Phase 1, researcher Phases 2 and 3, special education teachers
6. Boyle (1996) *Treatment fidelity* Scripted training procedure and strategy-monitoring checklist	Quasi-experimental Treatment comparison	30 students (20 LD, 10 EMR) 15 students each for T and C	6th–8th	11 sessions, (3–5/week; 50 min)	Timed reading series passages (grade level and below grade level)	Researcher

Table 2.1 (continued)

7. Brailsford, Snart, & Das (1984) *Treatment fidelity* NR	Quasi-experimental Matched comparison	24 students (LD) 12 students each for T1 and C.	NR (9–12 years)	30 sessions (5/week; 30 min)	NR	NR
8. Fore, Boon, & Lowrie (2007) *Treatment fidelity* NR	Single-subject	6 students (LD)	7th	8–12 sessions 2/week; 20 min)	Math vocabulary words	Teacher
9. Gajria & Salvia (1992) *Treatment fidelity* NR	Random assignment Treatment comparison	30 students (LD) 15 students each for T1 and C.	6th–9th	35 sessions (35–40 min)	Timed readings series (modified)	Researcher

Table 2.1 (continued)

10. Gardill & Jitendra (1999) *Treatment fidelity* Intervention checklist and scripted direct instruction lessons	Single-subject	6 students (5 LD, 1 neurological disorder)	6th–8th	30 sessions (50 min)	Narrative text (GE = 4th–7th)	Researcher
11. Graham & Wong (1993) *Treatment fidelity* NR	Random assignment Stratified by average and poor readers Treatment comparison (Multiple treatments)	90 students 45 average readers, 45 poor readers 30 students each for T1, T2, and C	5th, 6th	9 sessions (3/week; 25 min)	Reading comprehension training passages	Researcher

Table 2.1 (continued)

12. Graves & Levin (1989) *Treatment fidelity* NR	Random assignment Stratified by race/sex Treatment comparison (Multiple treatments)	30 students (LD) 10 students each for T1, T2, and C	5th–8th	1 session (68 min)	Reading for Concepts, Book C (GE = 2nd–3rd)	Researcher
13. Harris, Schumaker, & Deschler (2011) *Treatment fidelity* Intervention checklist	Random assignment Treatment comparison	24 students (LD) 10 for T1, and 6 for T2 and C	9th	10 sessions (45 min)	NR	Researcher

Table 2.1 (continued)

14. Jitendra, Cole, Hopes & Wilson (1998) *Treatment fidelity* Intervention checklist	Single-subject	4 students (LD)	6th	20–40 sessions (40–50 min)	Narrative text (GE = 3.3)	Teacher
15. Jitendra, Hoppes, & Xin (2000) *Treatment Fidelity* Scripted lessons with instructional checklist	Random assignment Treatment comparison	33 students (29 LD, 4 SED) 18 for T and 15 for C	6th–8th	15 sessions (30–40 min)	Main idea comprehension program (mean GE = 2.88)	Researcher

Table 2.1 (continued)

16. Kim et al. (2006) *Treatment Fidelity* 3-point Likert-type scale evaluating implementation	Random assignment Treatment comparison	34 students (28 LD, 5 other) 16 for T and 18 for C	6th–8th	20–24 sessions (2/wk; 50 min)	Read Naturally expository text passages (independent and instructional levels)	Researcher and teacher, computer-assisted instruction program
17. Klingner & Vaughn (1996) *Treatment fidelity* NR	Random assignment Treatment comparison	26 students (LD) 13 for T1 and 13 for T2	7th, 8th	27 sessions (6 wks; 35–40 min)	Social studies text (grade-level passages)	Researcher
18. Lauterbach & Bender (1995) *Treatment fidelity* NR	Single-subject	3 students (LD, EMR)	9th	NR	Expository text (GE = 9)	Teacher

Table 2.1 (continued)

19. Malone & Mastropieri (1992)	Random assignment Stratified by grade/sex	45 students (LD)	6th–8th	2 sessions (1/day)	Reading for Concepts, Level D (GE = 3.2)	Researcher
Treatment fidelity NR	Treatment comparison (Multiple treatments)	15 each for T1, T2, and C				
20. Mastropieri, Scruggs, Hamilton, Wolfe, Whedon, & Canevaro (1996)	Random assignment	29 students (LD)	7th, 8th	2 sessions	Characteristics about vertebrate animals	Researcher
	Treatment comparison					
Treatment fidelity NR						
21. Snider (1989)	Quasi-experimental	26 students (LD)	8th	13 sessions (3 wks, 50 min)	*Corrective Reading Program* – adapted. *Reading Mastery* III and IV	Researcher
Treatment fidelity NR	Treatment comparison	13 for T and 13 for C				

Table 2.1 (continued)

22. Vaughn et al. (2011) *Treatment fidelity* Intervention Validity Checklist	Random assignment Treatment comparison	49 students Poor readers	7th, 8th	24–48 sessions (2/wk; 50 min)	50% expository text	Teachers
23. Wong & Jones (1982) *Treatment fidelity* NR	Random assignment Treatment comparison	120 students (60 LD) 30 for T and 30 for C	8th, 9th	5 sessions (3 at 1 hr, 2 at 2 hr)	1- to 5-paragraph passages	Researcher

Note. NR = not reported; GE = grade equivalence; LD = learning disability; T = treatment group; T1 = treatment group 1; T2 = treatment group 2. C = control or comparison group; SED = special education; EMR = emotional and mental retardation.

Table 2.2: Summary of Measures and Outcomes

Intervention	Measure	Findings
1. Alfassi (1998) T1 – Reciprocal teaching: students taught previewing, clarifying, generating of questions, and summarizing of strategies in small groups C – Skills acquisition: remedial reading instruction provided by the school	*Standardized* Gates-MacGinitie Comprehension subtest Gates-MacGinitie Vocabulary subtest *Researcher-developed* Comprehension questions on taught passages	 T1 vs. C, ES = -0.23 (p > 0.05) T1 vs. C, ES = -0.17 (p > 0.05) T1 vs. C, *ES* = 0.98
2. Bakken, Mastropieri, & Scruggs (1997) *Treatment* T1 - Text-based strategy: Students taught to identify passage type, main idea, list, and order T2 - Paragraph restatement strategy: Students wrote brief statements about what they read	*Researcher-developed* Immediate, delayed, and transfer recall of central and incidental idea units	*Immediate recall* T1 vs. C, ES = 2.22 T2 vs. C, ES = 0.71 T1 vs. T2, ES = 0.49 *Delayed recall* T1 vs. C, ES = 3.11

Table 2.2 (continued)

Comparison Students read passages, answered questions, and reviewed responses		T2 vs. C, ES = 1.32 T1 vs. T2, ES = 1.01 *Transfer recall* T1 vs. C, ES = 2.56 T2 vs. C, ES = 1.40 T1 vs. T2, ES = 0.67
3. Berkeley, Mastropieri, & Scruggs (2011) *Treatment* T1 – Reading Comprehension Strategies (RCS): setting purpose, previewing, activating background knowledge, self-questioning, summarizing, and strategy monitoring T2 – RCS plus attributional retraining concepts related to overcoming negative self-talk about reading competence *Comparison* *Read Naturally* – fluency and reading comprehension through explicit repeated reading practice	*Researcher-developed* Comprehension summarization test	Comprehension summarization test T1 vs. C, ES = 1.40 T2 vs. C, ES = 0.92 T1 vs. T2, ES = -0.09
4. Bos & Anders (1990) *Treatment* T1 - Semantic Mapping: Hierarchical relationship map from vocabulary list T2 – Semantic Feature Analysis: Prediction of relationships among concepts from relationship matrix use T3 – Semantic/syntactic feature analysis: Prediction of	*Researcher-developed* Comprehension Posttest	Comprehension Posttest T1 vs. C, ES = 1.33 T2 vs. C, ES = 1.46 T3 vs. C, ES = 1.17 T1 vs. T2, ES = - 0.33 T1 vs. T3, ES = - 0.08 T2 vs. T3, ES = 0.21

Table 2.2 (continued)

relationships among concepts from relationship matrix use and answer predictions *Comparison* Definition Instruction - Direct teaching of the vocabulary words through recitation and memorization of simplified definitions	Comprehension Follow-Up	Comprehension Follow-Up T1 vs. C, ES = 0.46 T2 vs. C, ES = 0.43 T3 vs. C, ES = 1.39 T1 vs. T2, ES = - 0.03 T1 vs. T3, ES = - 0.71 T2 vs. T3, ES = - 0.57
5. Bos & Anders (1992) *Treatment* T1 – Semantic Mapping: Key concepts identified and discussed and predictions made about how concepts should be arranged to represent relationships	*Researcher-developed* Comprehension posttest	Posttest T1 vs. C, ES = 2.16 T2 vs. C, ES = 0.17 T1 vs. T2, ES = 1.14
T2 – Semantic Feature Analysis: Students and teachers completed a relationship chart for vocabulary words in relation to major concepts as: positive, negative, unrelated, or don't know *Comparison* Definition Instruction - Direct teaching of the vocabulary words through recitation and memorization of simplified definitions	Comprehension follow-up	Follow-up T1 v. C, ES = 0.78 T2 v. C, ES = 0.73 T1 v. T2, ES = 0.04
6. Boyle (1996) *Treatment*	*Standardized* *Formal Reading Inventory*	FRI T vs. C, ES = 0.33

Table 2.2 (continued)

Students taught to create cognitive maps through the use of a mnemonic device, TRAVEL (Topic, Read, Ask, Verify, Examine, Link). Students took notes and made check marks. *Comparison* Students took notes and created outlines of the passages	(FRI) *Researcher-developed* CB reading measure of below-grade-level and on-grade-level passages, 15 comprehension questions (10 literal, 5 inferential)	Below grade level Literal, T vs. C, ES = 0.86 Inferential, T vs. C, ES = 0.76 Grade level Literal, T vs. C, ES = 0.87 Inferential, T vs. C, ES = 0.95
7. Brailsford, Snart, & Das (1984) *Treatment* Cognitive strategy training - simultaneous and successive synthesis and verbalization *Comparison* Comprehension and interrelated word analysis	*Standardized* *Standard Reading Inventory* (SRI)	SRI T vs. C, ES = 0.97
8. Fare, Boon, & Lowrie (2007) *Treatment* Concept model – a concept diagram of the vocabulary word, definition, characteristics, examples and nonexamples	*Researcher-developed* Percentage of correct responses	Brenda- 83% Alex- 0% Phagen – 100% Joe- 100% Natika- 80%

Table 2.2 (continued)

Comparison Students looking up and writing down definitions and writing each word in a sentence		Ricky- 100%
9. Gajria & Salvia (1992) *Treatment* Explicit/direct instruction to teach summarization *Control* Not reported	*Researcher-developed* Passage comprehension – main ideas, cause and effect, concepts, and inferences Passage comprehension test - factual questions	Passage comprehension test - Condensation questions T vs. C, ES = 6.66 Passage comprehension test - Factual questions T vs. C, *ES* = 1.98
10. Gardill & Jitendra (1999) *Treatment* Explicit instruction in story map completion for key story elements of narrative text *Control* Baseline	*Researcher-developed* Basal comprehension test Story grammar Story elements recalled (mean percentage)	Marvin- 67% Mark- 50 % Chad – 20% Mitch- 10% Tara- 80% Jack- 100% 100% for all students Pretest-35.8% Posttest- 56.5%
11. Graham & Wong (1993)	*Researcher-developed*	Posttests

Table 2.2 (continued)

Treatment Both treatments included the 3H strategy (Here, Hidden, in my Head) question–answer relationship to classify question types and answers T1 – Didactic teaching group: students used prompt card for 3H strategy, took turns reading, predicted and answered questions T2 – Self-instructional training: same procedure as in didactic condition, and, in addition, students used three self-questions and were encouraged by researcher to think aloud *Comparison* Students participated in taking turns reading aloud, independently answering comprehension questions	Posttests, Maintenance 1, and Maintenance 2. Passages followed by comprehension questions	T1 vs. C, ES = 0.55 T2 vs. C, *ES* = 0.82 T1 vs. T2, *ES* = - 0.29 Maintenance 1 T1 vs. C, ES = 1.37 T2 vs. C, ES = 0.79 T1 vs. T2, ES = 0.39 Maintenance 2 T1 vs. C, ES = 1.51 T2 vs. C, ES = 0.30 T1 vs. T2, ES = 0.90
12. Graves & Levin (1989) *Treatment* T1 – Monitoring: taught to self-question about identification of main idea and record responses on 3 x 5 cards T2 – Mnemonic: taught to use a mnemonic method to generate a main idea and generate interactive images on 3 x 5 cards *Comparison* Scripted main idea instruction lessons	*Researcher-developed* Main idea identification	Main idea identification T1 vs. C, ES = 2.55 T2 vs. C, ES = 1.41 T1 vs. T2, ES = 1.13

Table 2.2 (continued)

13. Harris, Schumaker, & Deschler (2011) *Treatment* T1 – word mapping strategy: a set of steps, including breaking words apart (e.g., prefix, roots), attaching meaning to parts, making predictions, and checking dictionary definitions T2 – vocabulary strategy: a set of steps, including writing the definition, identifying reminder words and phrases, drawing a picture, and self-testing *Control* Typical practice English class	*Researcher-developed Word Knowledge Test* *Morphological Analysis Test*	*Word Knowledge Test* T1 vs. C, ES = 2.21 T2 vs. C, ES = 2.12 T1 vs. T2, ES = 0.32 *Morphological Analysis Test* T1 vs. C, ES = 1.32 T2 vs. C, ES = 0.25 T1 vs. T2, ES = 1.23
14. Jitendra, Cole, Hoppes, & Wilson (1998) *Treatment* Main idea instructional program focusing on character names and actions, group names and action, examining main ideas (i.e., how, where, and why questions), and reviewing, along with prompt cards with steps for finding the main idea *Control* One student did not receive instruction	*Researcher-developed* Narrative Comprehension Probes Expository Comprehension Probes	Chris- 85 Tanya- 85 Brian- 33 Chris- 42 Tanya- 71 Brian- 50 No PND available for 4th student
15. Jitendra, Hoppes, & Xin (2000) *Treatment* Main idea strategy instruction and self-monitoring procedures	*Researcher-developed* Main idea: training passages (identify and produce main	Training posttest T vs. C, ES = 2.19

Table 2.2 (continued)

utilizing a checklist card (i.e., Name the important person/group; name the main thing they did; answer *where, why*, *when*, and questions) *Control* Reading instruction with decoding and comprehension activities	idea for narrative passages); near transfer (similar narrative passages); far transfer (expository passages)	Training delayed T vs. C, ES = 1.02 Near transfer T vs. C, ES = 2.47 Near transfer delayed T vs. C, ES = 0.66 Far transfer T vs. C, ES = 1.81 Far transfer delayed T vs. C, ES = 0.61
16. Kim, Vaughn, Klingner, Woodruff, Reutebuch, & Kouzekanani (2006) *Treatment* Researcher-developed computer program. Interactive learning of comprehension strategies (preview, click and clunk, gist, and wrap-up) utilizing expository text at varied reading levels; performance-based feedback provided *Comparison* Fluency instruction, timed readings with student partners Vocabulary instruction and some comprehension instruction by one control teacher	*Standardized* *Woodcock Reading Mastery Test–Revised* Passage Comprehension subtest (WRMT-R PC) *Researcher-developed* CSR proximal measure of main ideas and questions. Passages at instructional reading level and 4th-grade level.	WRMT-R PC T vs. C, ES = 0.40 Main idea – instructional T vs. C, ES = 0.54 Questions – instructional T vs. C, ES = 0.87 Main idea – 4th grade T vs. C, ES = 0.81

Table 2.2 (continued)

		Questions – 4th grade T vs. C, ES = 1.56
17. Klingner & Vaughn (1996) *Treatment* T1 - Reciprocal teaching + tutoring: Reciprocal teaching plus peer tutoring on comprehension strategies T2- Reciprocal teaching + cooperative learning: Reciprocal teaching plus strategy practice in cooperative learning groups	*Standardized* Gates-MacGinitie Comprehension subtest *Researcher-developed* Passage comprehension test	Gates-MacGinitie T1 vs. T2, ES = -1.42 Passage comprehension test T1 vs. T2, ES = 0.35
18. Lauterbach & Bender (1995) *Treatment* RAP – Students were asked to read a paragraph, ask themselves the main idea and two details, and put them in their own words *Control* Baseline	*Researcher-developed* Paraphrasing Multiple-choice comprehension test (7^{th}-, 8^{th}-, and 9^{th}-grade materials)	Student A – 91 Student B – 92 Student C – 100 7th 8th 9th A 33 0 33 B 100 100 100 C 0 0 0

Table 2.2 (continued)

19. Malone & Mastropieri (1992) *Treatment* T1 - Summarization strategy training (Who or what is the paragraph about? What is happening? Use the answers to form a summary) T2 - Summarization strategy training with self-monitoring (Cue card used to check use of the summarization strategy) *Control* Typical practice in reading comprehension	*Researcher-developed* Summarization measures: Posttest of training, near transfer, and far transfer	Test of training T1 vs. C, ES = 2.87 T2 vs. C, ES = 2.12 T1 vs. T2, ES = -0.35 Near transfer T1 vs. C, ES = 1.31 T2 vs. C, ES = 1.43 T1 vs. T2, ES = 0.02 Far transfer T1 vs. C, ES = 1.13 T2 vs. C, ES = 2.07 T1 vs. T2, ES = -0.74
20. Mastropieri, Scruggs, Hamilton, Wolfe, Whedon, & Canevaro (1996) *Treatment* Students asked by instructor to reason actively through each sentence of the text. Students ask themselves, "Why does that make sense?"	*Researcher-developed* Facts test Explanations test	Facts T1 vs. C, ES = .052 (p = .886) Explanations T1 vs. C, ES = 0.89

Table 2.2 (continued)

Comparison Encouragement to remember passage facts		
21. Snider (1989) *Treatment* Factual information or vocabulary concepts consisting of structured oral presentation, group application, and independent practice *Control* Read and answer questions with vocabulary instruction	*Researcher-developed* Explicit and implicit text with multiple choice questions	Comprehension test T vs. C, ES = 1.57
22. Vaughn et al. (2011) *Treatment* CSR – preview, get the gist, click and clunk, and wrap reading strategies with cooperative learning *Control* Typical practice of reading and English classes	*Standardized* Gates-MacGinitie Reading Test AIMS Web Reading CBM TOSREC	 T1 vs. C, ES = 0.36 T1 vs. C, ES = 0.03 T1 vs. C, ES = 0.16
23. Wong & Jones (1982) *Treatment* Main idea and self-questioning training (i.e., Think of a question about the main idea you have underlined). Prompt card including steps to self-questioning and space to write questions	*Researcher-developed* Comprehension of key ideas	Comprehension test T vs. C, ES = 0.56

Table 2.2 (continued)

Comparison	
Main idea training. Students asked to read and assess text quality. Provided assistance with decoding and vocabulary	

Note. C= control group or comparison group; ES = effect size; PND = percentage of nonoverlapping data; T1 = Treatment Group 1; T2 = Treatment Group 2; ^ = as cited in Edmonds et al. (2009); ^^ = Phase 3 only; * = effect size adjusted for pretest differences; TOSREC = *Test of Silent Reading Efficiency and Comprehension*

Table 2.3: Overview of Findings From Studies of Intensive Interventions With Secondary Students

Year	Research question(s)	Findings
1	1. What are the relative effects of a secondary intervention (Tier 2) provided in relatively large groups (10–15 students) on the reading-related outcomes of individuals with reading difficulties? 2. Do students who are assigned to small-group (n = 5 students) instruction outperform students in large-group (n = 10 students) instruction?	Small effects (median d = 0.16) in favor of treatment students on measures of decoding, fluency, and comprehension. No statistically significant differences between students in small-group and large-group instruction.
2	1. What are the relative effects of a tertiary intervention (Tier 3) provided in an individualized versus a standardized approach in groups of 5 students on reading-related outcomes of individuals with reading difficulties?	No statistically significant differences between students participating in the standardized or the individualized treatment.

Table 2.3 (continued)

	2. What are the relative effects of a tertiary intervention (Tier 3) provided in groups of 2–4 students on the reading-related outcomes of individuals with reading difficulties?	Statistically significant differences favoring students in the treatment condition on a reading comprehension measure.
3	What are the effects of an intensive, individualized intervention (Tier 4) provided in groups of 2–4 students on the reading outcomes of students with significant reading difficulties who had demonstrated very low growth in 2 years on a previous small-group reading intervention, relative to low-growth students in a comparison condition, who received whatever instruction was typically provided to low-performing readers in their schools?	Large effects found in favor of the treatment students found on reading comprehension (ES = 1.20), and medium effects found on word identification (ES = 0.49), although treatment students continued to fall below grade-level proficiency.

Note. Research questions and findings cited in Vaughn, Cirino, et al. (2010); Vaughn, Wexler, Leroux, et al. (2011); and Vaughn, Wexler, Roberts, et al. (2011)

Chapter 3: Method

Overview

In this chapter, I describe the treatment and control conditions, research questions, research design, participants, training of interventionists, materials, explicit systematic instruction, procedures, data collection, measures, and data analysis. Three primary sources influenced the development of the intervention for this study: (a) previous reading intervention research conducted with secondary students with severe reading difficulties (Denton, Fletcher, Anthony, & Francis, 2006; Vaughn et al., 2008; Vaughn et al., 2010; Vaughn et al., 2011); (b) research on cognitive processing factors associated with reading for understanding, such as memory and inferencing (Cromley & Azevedo, 2007); and (c) focus groups with English, social studies, and science teachers. The purpose of this study was to compare the relative effects of a multicomponent reading comprehension intervention to those of a business-as-usual control condition for students with adequate decoding and low comprehension.

Description of the Intervention

Students received reading intervention instruction for 90-min sessions two to three times per week during school year 2011-2012 for approximately 80 sessions. The intervention reading materials focused on expository text that covered content similar to what is taught in social studies and science classes, with some use of narrative text. Students read passages of high interest on the following units: introduction to human

geography; Europe, Russia, and Transcaucasia; Africa; energy and cellular transport; cell cycles; meiosis and genetics; and heredity and evolution. Lesson units were designed for five sessions over a 2-week period. The core components of each unit included the following: vocabulary/concept instruction, text-based instruction, grammar print structures, foundations of fluency, complex language structures, morphology, and inference reading drills. Each unit included a text-buildup cycle starting with shorter amounts of text (i.e., sentences and paragraphs), and then moved into longer amounts of text (multiparagraph and passage level) by the end of the unit. At the end of each unit, a curriculum-based measurement was administered to the students. Each unit consisted of the following activities.

Vocabulary/concept Instruction (5–20 min)

For the first session of each unit, 20 min of explicit vocabulary/concept instruction (three–five words) was provided on simplified definitions, visuals, synonyms, sentence use, turn and talks, and position statements. For the remaining sessions of the unit, 5 to 10 min of vocabulary/concept instruction was provided that helped review and reinforce the meaning of the identified vocabulary words.

Text-Based Instruction (15–20 min)

Text-based instruction was taught for four 20-min sessions. Students read expository text passages on topics aligned with the ninth-grade social studies and science curricula. Before reading, students previewed the passage. Interventionist teachers asked students about their prior knowledge of the topic and why learning more was important.

During reading, students identified parts of the text where their comprehension broke down, and they were then provided with instruction on how use fix-up strategies to gain understanding of the text. Students were taught to look more closely at the area of text where the breakdown in understanding occurred, and reread sentences around that part of the text to gain better understanding.

Grammar Print Structures (12–20 min)

Grammar print structures were taught for four 12- to 15-min sessions and one 20-min session. Instruction for grammar print structures included dissection of the different elements of grammar, including the use of commas, quotes, and referents. Instruction for commas included identifying the purpose of commas as they relate to gaining more meaning from text. Students were taught how commas help to answer *who, where, why, what* and *how* questions. Quotes instruction included identifying quoted passages, sources of quotes, and how the information applies to the meaning of the text. The term *referent* identifies sentence structures where one aspect of the sentence must be referred back to in order to figure out meaning. Anaphoric devices inform readers where to search for a referent, typically a pronoun, and serve as a pragmatic signal identifying the referent that was recently discussed and is available in memory but is not currently in attention. Students were taught how to identify referents and how understanding of referents can improve understanding of text.

Complex language structures (0–15 min)

Complex language structures were taught for two 15-min sessions during each unit. Complex language structure instruction included identifying and teaching the meaning of similes, metaphors, and morphology. Morphology instruction covered suffixes, prefixes, root words, and base words.

Inference Training (15–20 min)

Inference training was taught for three 15-min sessions and one 25-min session per unit. Explicit instruction on the concept of an inference was taught initially at the sentence level. This was followed by inference reading instruction that included comprehension questions, inference questions, summary questions, and vocabulary questions. Students reviewed vocabulary prior to reading, read the two- to seven-paragraph passages, and answered inference questions.

DESCRIPTION OF THE CONTROL CONDITION

Students assigned to the comparison condition participated in any elective classes offered by the district. These included visual arts, performing arts, audio and video technology, and athletics. Students received any reading remediation support the school typically provided. School administrators indicated that additional test preparation was offered to students with low scores in reading; however, no reading intervention classes were offered for ninth-grade students at any of the high schools that participated in the study.

RESEARCH QUESTION

This study examined the effects of a multicomponent treatment on the reading comprehension of ninth-grade students with adequate word reading skills and low comprehension. The following research question guided this study:

To what extent does a multicomponent reading intervention with adolescent students who are adequate word readers and low in reading comprehension impact reading comprehension outcomes?

RESEARCH DESIGN

This study employed a one between- and one within-factor repeated measures design to address the research question. There are two between-factor levels: (a) reading intervention and (b) control condition. There are two within-factor levels: (a) pretest and (b) posttest.

The present study examined the effects of an 80-min multicomponent reading intervention, conducted two to three times per week, on the reading comprehension of a cohort of ninth-grade students during the 2011–2012 school year who (a) failed the seventh-grade Texas Assessment of Knowledge and Skills (TAKS) reading test, (b) participated in district-offered reading interventions as eighth graders (school year 2010–2011), (c) demonstrated adequate decoding skills, and (d) demonstrated difficulty with reading comprehension. Outcomes were examined at the end of the spring semester.

Students were randomly assigned to either a reading intervention treatment class or a business-as-usual control condition. A group experimental design was chosen

because it is widely recognized as the most appropriate method in intervention research (Gersten, Baker, & Lloyd, 2000). The method of random assignment of students to interventions and control groups assisted in reducing error and ensuring that differences in outcomes were the result of the implemented treatment.

PARTICIPANTS

The proposed sample consisted of 59 ninth-grade students. Students were eligible for the study if they were enrolled in a district-provided reading intervention class in eighth grade, displayed adequate word reading skills, and demonstrated difficulties with reading comprehension according to cut scores established on screening measures. An experienced independent researcher with significant experience in randomizing study participants completed the randomization; this individual was not affiliated with the research team. Students were randomized 2:1 favoring the treatment condition for the following two reasons: (1) Treatment from the vast majority of intervention studies yields positive effects, so it was potentially beneficial to treat as many students as possible, and (2) a larger treatment sample would increase power since the sample size was small. The initial sample size was 60 students (40 treatment, 20 control). After attrition, final sample for the study consisted of 44 students (25 treatment, 19 control). Some students did not participate in the study due to scheduling issues or because they were no longer enrolled in the district. Results are summarized in Table 3.1. Fisher's exact probability test showed no statistically significant difference between the two groups on the basis of the number of dropouts.

Table 3.1: Attrition Rate

Treatment	Control	Total	
A/I	A/I	A/I	
15/40	1/20	16/60	Fisher's exact probability = 0.096

Note. A = attrition. I = initial enrollment.

Student Information

The treatment and control groups were compared on the demographic variables of ethnicity, special education status, English as a second language (ESL) status, retention status, and age from data provided by the district. Table 3.2 represents the frequency of different ethnicities by experimental condition. The majority of participants were Hispanic (50% of the total sample) and African American (32% of the total sample). The other categories for ethnicity combined made up 20% of the total sample and included Asian, two or more ethnicities, and Caucasian.

Table 3.2: Ethnicity

Group assignment	Ethnicity	Frequency	Valid percentage
Treatment	Hispanic	14	56.0
	African American	7	28.0
	Two or more ethnicities	1	4.0
	Asian	1	4.0
	Caucasian	2	8.0
	Total	25	100.0
Control	Hispanic	8	42.0
	African American	7	36.8
	Two or more ethnicities	3	16.0
	Asian	1	5.0
	Caucasian	0	0.00
	Total	19	100.0

A description of students by special education status, limited English proficiency status, and history of retention is presented in Table 3.2. The largest numbers of students were identified by the district data as having ESL status. The special education and retention groups each accounted for approximately 27% of the total sample. There were a higher percentage of students in all three categories that participated in the treatment

condition when compared to both the total percentages and the control condition percentages. With the exception of the control condition for retention status category, all other categories were represented by percentages above 25%.

Table 3.2: Student Demographic Information

	SPED status	ESL status	Retention status
Treatment (n = 25)	28% (n = 7)	40% (n = 10)	32% (n = 8)
Control (n = 19)	26.3% (n = 5)	31.5% (n = 7)	21% (n = 4)
Total (N = 44)	27% (n = 12)	36.3% (n = 16)	27.2% (n = 12)

Note. SPED = special education; ESL = English as a second language.

INTERVENTION TEACHERS

The students received reading instruction from intervention teachers who were hired, trained, and supervised by research staff. Both intervention teachers had master's degrees in education. The first intervention teacher had experience as a high school English teacher and had previously provided reading intervention instruction as part of a large-scale experimental study. The second teacher had experience as an English teacher in an inner-city middle school prior to joining the research team.

TRAINING OF THE INTERVENTION TEACHERS

All teachers participated in 16 hours of training prior to the beginning of school year 2011–2012. The professional development addressed instructional strategies and materials designated for the multicomponent reading intervention for the identified sample of ninth graders. Professional development topics covered each of the components: vocabulary/concept instruction, text-based instruction, grammar print structures, foundations of fluency, complex language structures, morphology, and inference reading drills. In addition, teachers were trained on instructional techniques, including explicit instruction, correct pacing, error correction, and scaffolding. Intervention teachers were trained on lesson planning, curriculum resources, and the use of progress-monitoring forms. Intervention teachers attended weekly meetings and participated in classroom coaching sessions during the school year. Experienced instructional coaches provided feedback to intervention teachers regarding materials and instruction on a weekly basis.

MATERIALS

Initially, teachers were given a set of model lessons that included reading materials and information to guide their instruction about each of the intervention components. Experienced research staff developed the research-based lessons and identified appropriate readings. High-quality educational materials and electronic databases were searched comprehensively for reading material. Because instruction took place in small groups (7 to 12 students), it was expected that the trained intervention

teachers would scaffold learning for individual students through the use of a range of text types and difficulty levels that prepared the students to read and understand a variety of materials.

For subsequent units, intervention teachers helped research staff to develop lessons and locate appropriate materials based on set of provided guidelines. Experienced research staff reviewed subsequent units to ensure that lessons adhered to the specified guidelines.

Students were deliberately exposed to a range of reading levels—some aligned with the students' reading ability and some aligned with ninth-grade reading levels. Recommendations from ninth-grade social studies and science teachers were the initial basis of the reading materials for the intervention. Research staff asked content area teachers to identify related content from curriculum bundles that could be read in the reading intervention class prior to being taught in the content area class. For example, if molecular cells were the topic in science class, then readings for the intervention class included an article about metastasized cancer cells. Most of the passages were expository text; however, some narrative text was included. Expository text was used because it represented the common types of text that secondary students are asked to read and comprehend in school. Furthermore, this text type is particularly important for content learning and is often challenging for adolescent students with difficulties in reading comprehension (Gardill & Jitendra, 1999).

Each unit was designed to include a text-buildup cycle, starting with shorter amounts of text (i.e., sentences and paragraphs) and then moving into longer amounts of

text (multiparagraph and passage level) by the end of the unit. At the end of each unit, a curriculum-based measurement was administered to students. Intervention teachers used results from the curriculum-based assessment to identify areas that needed further instruction.

EXPLICIT AND SYSTEMATIC INSTRUCTION

Reading intervention teachers used features of explicit instruction and systematic instruction with frequent opportunities for student response and feedback. Explicit instruction involves clearly teaching the steps or processes necessary to comprehend a concept, apply a strategy, or complete a task. Teachers started by presenting new information through teacher modeling, demonstrations, and step-by-step instructions of what was expected of students in the learning task. Systematic instruction was provided by breaking down complex tasks into smaller pieces of information that were more manageable and effective, through careful consideration of how these discrete skills related to the overall learning goal. Reading intervention teachers provided scaffolds and temporary supports to manage the level of difficulty throughout the learning process. Complex learning tasks were broken down into multiple steps or processes with discrete skills taught to mastery before bringing together the entire learning process.

This was followed by opportunities for students to practice the new material, with feedback provided by the teacher after each step of the learning task. Students were provided opportunities to discuss and deepen their understanding of the concepts. Finally, students were given opportunities to practice and apply the material

independently. Research on interventions incorporating explicit and systematic instruction for students with learning difficulties have shown improved outcomes for both basic skills and higher-level concepts (Biancarosa & Snow, 2004; Coyne, Kame'enui, & Simmons, 2001; National Reading Panel, 2000; Swanson, 2000; Torgesen, 2002).

PROCEDURE

An initial pool of participants who participated in eighth-grade reading intervention classes based on their TAKS reading test failure during the seventh grade were identified by the district. These participants were assessed with the *Test of Word Reading Efficiency* (TOWRE) (Torgesen, Wagner, & Rashotte, 1999) and *Gates-MacGinitie Reading Test* (4th ed.) (MacGinitie& MacGinitie, 1989), and prior to school year 2011–2012. Students were identified for the proposed study according to the following criteria:

1. Scored > 85 on the TOWRE
2. Scored < 93 on the Gates-MacGinitie

Students in the research intervention group were placed into classes of 7 to 12 students. The multicomponent intervention was implemented as part of an elective class during 90-minute instructional blocks that took place two to three times per week beginning in late August 2011 and ending in late May 2012. Approximately 80 sessions occurred. Pretesting took place at the beginning of the school year; posttesting occurred the week immediately following the intervention. Reading measures and a language measure were administered to all students: the Gates-MacGinitie reading test, the

Woodcock Johnson Passage Comprehension subtest (Woodcock, Schrank, Mather, & McGrew, 2001), the TOWRE, and the *Test of Sentence Reading Efficiency* (TOSRE) (Wagner, Torgesen, Rashotte, & Pearson, in press). An Instructional Validity Checklist (IVC), (see Appendix B), was used to measure fidelity of implementation.

OBTAINING CONSENT

Prior to conducting the study, research staff met with school personnel to discuss the study. The study was approved through the district application process and the institutional review board (IRB) at The University of Texas at Austin. The research team and teachers met with eligible students and explained the purpose of the study and what the requirements were for participation. An initial pool of 175 students was identified who met the criteria for participation prior to screening. Research staff sent parental consent (see Appendix C) and student assent (see Appendix D) forms home to all 175 students. Of the approximately 60 forms returned, 31 provided permissions for participation. As a follow-up, a waiver of written consent was obtained from the IRB office, and the research staff obtained permission from district officials to send letters home, followed by phone calls from district personnel. A telephone script (see Appendix E) explaining the study was developed to be used by the district personnel completing the calls. Calls were made to 115 students who did not return a form at the end of school year 2010–2011 to seek permissions for participation. Consent for participation was obtained for 29 additional students, bringing the total initial sample size to 59 students.

DATA COLLECTION

Members of an assessment team administered the measures to the students. All assessors were extensively trained on administering each measure and on general testing procedures, and they were required to pass reliability testing prior to working with students in the study. All assessments were counterbalanced and given by examiners "blind" to the intervention and control condition.

MEASURES

The Gates-MacGinitie reading test, Woodcock-Johnson Passage Comprehension subtest, and TOSRE were administered as pretests and posttests. The *Kaufman Brief Intelligence Test* (KBIT) (Kaufman & Kaufman, 2004) was administered at pretest only.

Gates MacGinitie Reading Test–Fourth Ed.

This test is a timed, group-administered assessment of reading comprehension. It consists of expository and narrative passages ranging in length from 3 to 15 sentences. Students answer three to six multiple-choice questions related to the most recently read passage. Internal consistency reliability ranges from .91 to .93, and alternate form reliability is reported as .80 to .87. This will take approximately 40 min.

Woodcock-Johnson-III Passage Comprehension Subtest (WJ-III)

This subtest consists of 43 items that are individually administered. A passage is presented to the student to read, and the student selects a word or phrase that is

appropriate given the context of the passage. The items are arranged in order of increasing difficulty. This will take approximately 15 min.

Test of Word Reading Efficiency (TOWRE)

The TOWRE (Torgesen, Wagner, & Rashotte, 1999) consists of two individually administered 45-second subtests of word reading and decoding of pseudowords. Each list of words and nonwords starts with the least-difficult items and gradually increases in difficulty.

Test of Silent Reading Efficiency (TOSRE)

The TOSRE is a 3-min, group-administered assessment of reading fluency and comprehension. Students are presented with a series of short sentences and asked to assess whether the sentences are true or false.

Kaufman Brief Intelligence Test–Second Edition (KBIT-2)

This KBIT-2 is individually administered in approximately 15 min; it assesses both verbal and nonverbal intelligence in people from 4 through 90 years of age. The KBIT-2 is composed of two separate scales. The Verbal Scale contains two kinds of items—Verbal Knowledge and Riddles—both of which assess crystallized ability (knowledge of words and their meanings). The items cover both receptive and expressive vocabulary, and they do not require reading or spelling. The Nonverbal Scale includes a Matrices subtest that assesses fluid thinking—the ability to solve new problems by perceiving relationships and completing analogies.

FIDELITY OF IMPLEMENTATION

Information on fidelity of implementation was collected for the reading intervention conditions. Throughout the year, research staff conducted three in-person fidelity observations for each teacher using the instructional validity checklist (see Appendix B). Fidelity was evaluated by coding the instructional sequences and documenting the presence or absence of each critical component on a 5-point Likert-type scale. Analyses were conducted on entire lessons and component implementation to identify particular areas to target during ongoing professional development with the reading intervention teachers. Global measures of teacher quality and classroom management were also measured on a 5-point Likert-type scale.

To ensure fidelity of the treatment, the reading intervention teachers were closely supervised and monitored by the project supervisors. The reading teachers met weekly with the project director and provided feedback on (a) student progress, (b) how the material was adapted, and (c) how the instruction was modified to target students' specific areas of reading difficulties.

DATA ANALYSIS

Inferential statistics were used to evaluate the significance of any differences between groups. Fisher's exact probability test was used to test for differences in the sample based on attrition. Treatment effects were estimated using an ANCOVA. ANCOVAs were conducted for each outcome measure. In addition, effect sizes for each

measure were calculated using eta squared. IVCs were scored as a measure of treatment fidelity. Results are described in more detail in chapter 4.

Chapter 4: Results

DATA ANALYSIS

Descriptive information of the pre and posttest measures is presented followed by information from a series of repeated measures of analysis of covariance (RM-ANCOVA) for each dependent variable, which were used to address the research question by evaluating the statistical significance of group differences. The Kauffman Brief Intelligence Test (KBIT), a measure of verbal intelligence, was administered during pretest and was used as the covariate within the analysis. Measures of verbal ability have been previously used to explain the variance involved with reading ability for adolescents with reading difficulties (Catts, Adlof, & Weismer, 2006).

For each dependent measure, findings are reported for the RM-ANCOVA including tests of assumptions. Findings from the following tests of assumptions for each measure are reported: Box's Test of Equality of Covariance Matrices, the test for homogeneity of regression slopes, and Levene's Test of Equality of Error Variances. Box's Test of Equality of Covariance Matrices tests that the observed covariance matrices of the dependent variables are equal across groups. Levene's Test of Equality of Error Variances tests that the error variance of the dependent variable is equal across groups. F-tests, correlations between the dependent measures and the covariate, and effect sizes using partial eta squared (η^2) are reported. For purposes of analysis, partial eta squared effect sizes will be defined in the following manner: small ($\eta^2 = .03$),

medium (η^2 = .06) and large (η^2 = .10). A summary of between-subject effects for each of the RM-ANCOVAs is reported in table 4.2.

RESEARCH QUESTION

This study examined the effects of a multi-component treatment on the reading comprehension of 9th grade students with adequate word reading skills and low reading comprehension. Intervention was provided for 90-minute sessions 2-3 times per week during school year 2011-2012 for approximately 80 sessions. Students were randomly assigned to treatment or a no treatment comparison condition. The primary research question addressed in this study:

> To what extent does a multicomponent reading intervention with adolescent students who are adequate word readers and significantly low in reading comprehension impact reading comprehension outcomes?

DESCRIPTIVE INFORMATION OF OUTCOME MEASURES

Pretest and posttest standard scores means and standard deviations for treatment and no treatment comparison condition groups are reported in Table 4.1 for the Gates MacGinitie reading test and the Woodcock-Johnson III passage comprehension test. Pre and posttest raw scores means and standard deviations are reported for the Test of Sentence Reading Efficiency (TOSRE) because standard scores were unavailable.

Table 4.1: Word Reading and Comprehension Pretest and Posttest Standard Scores

	Pre		Post	
	M	SD	M	SD
Treatment (n=25)				
GM-RT	88.88	7.72	83.71	9.48
TOSRE*	22.61	4.39	23.39	6.02
WJIII-PC	77.52	13.47	82.00	16.09
Comparison (N=19)				
GM-RT	81.13	7.33	81.16	8.13
TOSRE*	20.39	4.31	21.56	4.97
WJIII-PC	77.50	12.53	76.61	12.28
Total=44				

Note. *Raw scores only, standard scores not available. GM-RT=Gates-MacGinitie Reading Test; WJIII-PC=Woodcock Johnson III passage comprehension subtest; TOSRE=Test of Sentence Reading Efficiency.

ANALYSIS OF INTERVENTION EFFECTS

Results of the Woodcock Johnson III Passage Comprehension Subtest

The RM-ANCOVA for the WJIII-PC measure indicated that the assumptions for the Box's Test of Equality of Covariance Matrices was met (p=0.27), and the Levene's Test of Equality of Variance (p=0.94) was met. The test for homogeneity of regression slopes was also met F(1,37)=.988, p=.516. The correlations between the WJIII-PC and

the KBIT covariate were 0.35 at pretest and 0.31 at posttest. The test of repeated measure of effects by condition was not statistically significant F(1,38)=1.27, p=0.27. The effect size for the WJIII-PC between treatment and the no treatment comparison condition conditions was medium ($\eta^2 = 0.03$). Figure 4.1 shows a visual display of students' performance contrasting differences between the treatment and comparison conditions for the WJIII-PC measure.

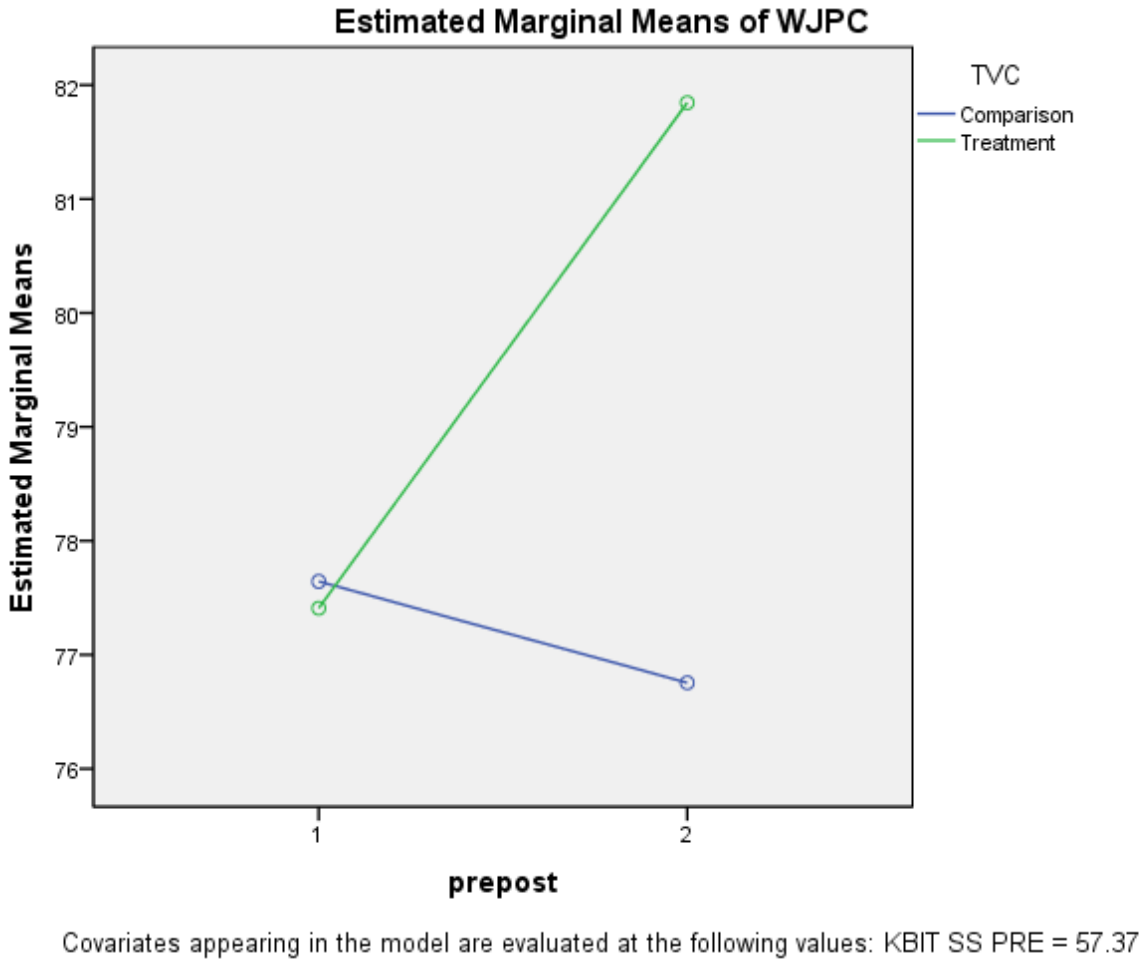


Figure 4.1. Pretest and Posttest Estimated Marginal Means for Treatment and Comparison Conditions: Woodcock Johnson III passage comprehension test.

Results of the Gates MacGinitie Reading Test

The RM-ANCOVA for the Gates MacGinitie Reading test indicated the assumptions of The Box's Test of Equality of Covariance Matrices was met (p=0.44) and the assumptions of Levene's Test of Equality Error Variances (p>0.05) was met. The test for homogeneity of regression slopes was also met F(1,37)=2.5, p=.122. The correlations between the Gates MacGinitie Reading Test and the KBIT covariate were 0.23 at pretest and 0.31 at posttest. The test of repeated measure of effects by condition was not statistically significant F(1,38)=4.12, p=0.35. The effect size for the GM-RT between treatment and comparison conditions was large in favor of the comparison condition (η^2 = 0.23). Figure 4.2 shows a visual display of students' performance contrasting differences between the treatment and comparison conditions for the GM-RT measure.

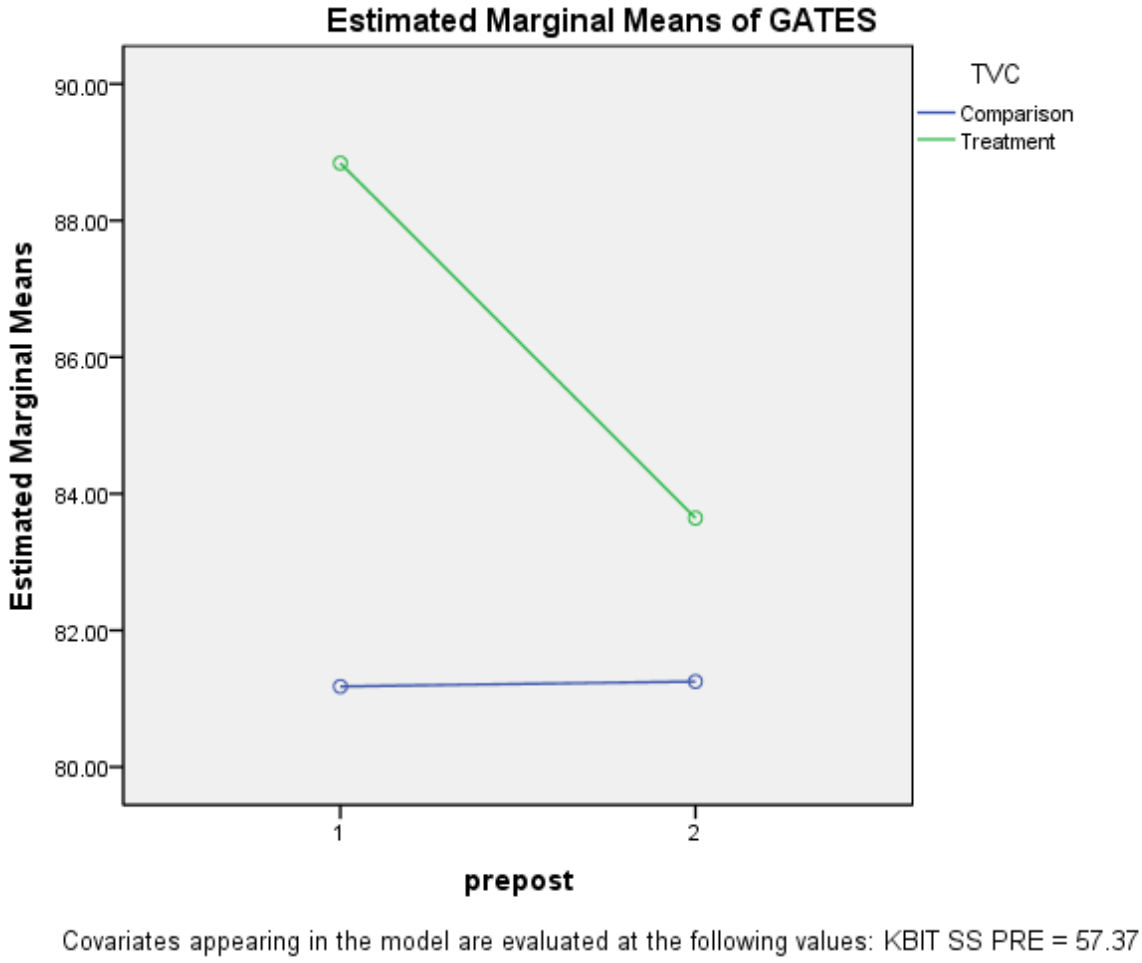


Figure 4.2. Pretest and Posttest Estimated Marginal Means for Treatment and Comparsion Conditions: Gates MacGinitie

There were statistically significant differences between the treatment and comparison condition at pretest F(1,38)=11.50, p=.002. To further analyze the results for this measure, I ran an ANCOVA using the pretest scores from the GM-RT as a covariate. The Levene's Test of Equality of Error Variances(p>0.05) was met. The test of between-subject effects was not statistically significant F(1,38)=.62, p=0.44. The effect size for the GM-RT between treatment and comparison conditions was small in favor of the

comparison ($\eta^2 = 0.26$). Figure 4.3 shows a visual display of students' performance contrasting differences between the treatment and comparison conditions for the Gates MacGinitie measure.

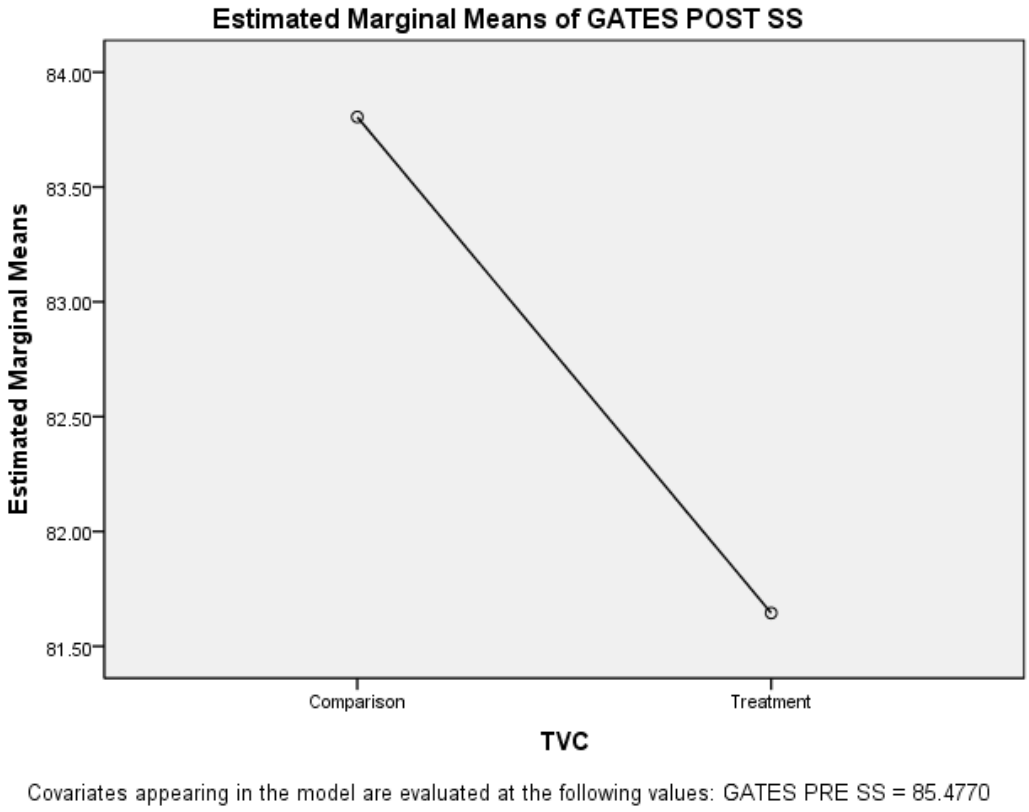


Figure 4.3. Posttest Estimated Marginal Means for Treatment and Comparison Conditions: Gates MacGinitie Reading Test (GM-RT)

Results of the Test of Sentence Reading Efficiency (TOSRE)

The RM-ANCOVA for the TOSRE measure indicated that the assumptions for Box's Test of Equality of Covariance Matrices were met ($p = 0.57$), and the Levene's Test of Equality of Error Variances ($p>0.05$) was met. The correlations between the TOSRE and the KBIT covariate were 0.46 at pretest and 0.32 at posttest. The test for homogeneity of regression slopes was also met $F(1,38)=2.5$, $p=.122$. The test of repeated measure of effects by condition was not statistically significant $F(1,38)=.07$, $p=0.60$. The effect size for the TOSRE between treatment and comparison conditions was small ($\eta^2 = 0.007$). Figure 4.4 shows a visual display of students' performance contrasting differences between the treatment and comparison conditions for the TOSRE measure.

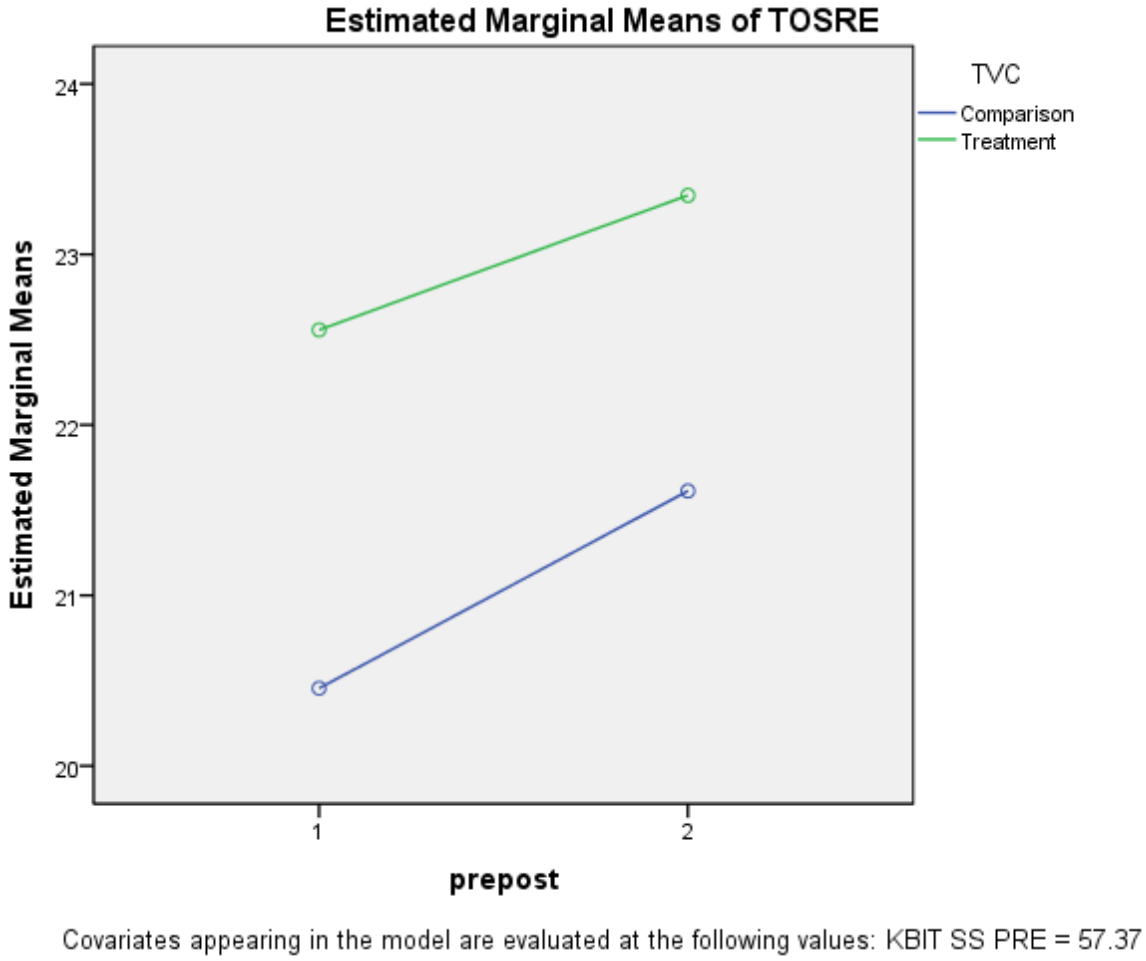


Figure 4.4. Pretest and Posttest Estimated Marginal Means for Treatment and Comparison Conditions: TOSRE

Table 4.2: Tests of repeated measure of effects by condition – update findings

Measure	F	Df	P	η^2
WJIII-PC	4.12	1,38	0.35	0.23
GM-RT	0.62	1,38	0.44	0.26
TOSRE	0.07	1,38	0.60	0.007

Note. GM-RT=Gates-MacGinitie Reading Test; TOSRE=Test of Sentence Reading Efficiency; WJIII-PC=Woodcock Johnson III Passage Comprehension Test.

FIDELITY OF IMPLEMENTATION

Table 4.3 presents percentage score data for each of the treatment components as observed by an experienced member of the research team. The six fidelity observations indicated relatively high levels of implementation for five of the six components of the intervention. The reading intervention teachers implemented 93% of the observed components with scores of 4 or 5 on the 5-point likert-type scale during the fidelity observations. For the quality indicators of global observations 75% of the scores were five, 17% of the scores were four, and 8% of the scores were three on the 5-point likert-type scale. Overall, these data suggest that reading intervention teachers consistently provided high levels of procedural fidelity and quality.

Table 4.3: Fidelity observation percentage score data for treatment components

	Essential Words		Text-Based Instruction		Grammar Print Structures		Complex Language Structures		Inference Training	
	n (6)	%	n (6)	%	n (6)	%	n (3)	%	n (6)	%
Implementation										
5-All or nearly all of the required elements and procedures	6	100%	3	50.0%	3	50.0%	2	66.7%	3	50%
4-More than half of the required elements and procedures	0	0%	2	33.3%	2	33.3%	1	33.3%	3	50%
3-Approximate half of the required elements and procedures	0	0%	1	16.7%	1	16.7%	0	0%	0	0
2-A few of the required elements and procedures	0	0%	0	0%	0	0%	0	0%	0	0
1-Expected required elements were not completed	0	0%	0	0%	0	0%	0	0%	0	0
Quality Rating										
5- High	4	66.7%	3	50.0%	3	50.0%	1	33.3%	3	50%
4	2	33.3%	2	33.3%	2	33.3%	2	66.7%	3	50%
3-Average	0	0	1	16.7%	1	16.7%	0	0%	0	0%
2	0	0%	2	18.2%	0	0%	0	0%	0	0%
1-Low	0	0%	0	0%	0	0%	0	0%	0	0%
N-Component not completed	0	0%	0	0%	0	0%	0	0%	0	0%

Chapter 5: Discussion

A significant number of adolescents have difficulty with comprehending complex text (Biancarosa & Snow, 2004; Kamil et al., 2008). While recent data trends starting from 1992 on the National Assessment of Educational Progress (NAEP) have shown slight increases in reading performance for students in 4th and 8th grades, these increases do not hold true for students in high school. Over a 15-year period, students in grade 12 showed a significant decrease in reading comprehension with approximately 27% of students scoring below the basic reading level (Grigg, Donahue, & Dion, 2007). Yearly growth in reading ability is typically the largest during the elementary grades and declines considerably over time with high school students making the least growth (Bloom et al., 2008).

Students in high school who struggle with reading, often read less than their peers, which contributes further to their reading difficulties (Stanovich, 1986). As a result of reading less, the gap often widens causing further decline of students' automaticity of word reading, vocabulary, and background knowledge. As students who are behind with reading ability enter the secondary grades, the gap often increases substantially with students who should be reading 10,000,000 words during the school year might be reading as few as 100,000 words (Lyon, 1997). Because the gap of reading proficiency begins to widen at the beginning of high school, development of interventions to address the needs of students who struggle with reading is an important undertaking.

The purpose of this study was to test the efficacy of a multi-component intervention designed to improve reading comprehension outcomes for 9th grade students with adequate word reading and low reading comprehension. Students were

assigned to one of two groups: multi-component intervention, or no treatment comparison group. Students in the treatment condition were provided weekly reading intervention (90 minutes 2-3 times/week) by reading intervention teachers trained and hired by the research team. Overall the results of the multi-component reading intervention yielded no statistically significant effects for reading comprehension. The treatment condition did not prove to be beneficial when contrasted to a no treatment comparison group. There was little or no growth according to two of the measures (GM-RT, and TOSRE). However, findings from one measure (WJIII-PC) indicated growth in reading for students in the treatment when contrasted to the no treatment comparison condition according to pre and posttest scores when comparing group means of the two groups at posttest. This difference may indicate a practical significance that is worthy of further exploration.

FINDINGS LINKED TO RESEARCH QUESTION

In order to address the research question for this study, I summarize the finding for each of the outcome measures. The Woodcock Johnson III passage comprehension test (WJIII-PC) is an individually administered cloze-based assessment that asks students to read a passage and fill in missing words. The test of sentence reading efficiency (TOSRE) is a 3-minute timed, group-administered test used to assess reading fluency. The Gates MacGinitie reading test (GM-RT) requires students to read a passage and respond to multiple-choice questions. Findings will be addressed to answer the research question: To what extent does a multicomponent reading intervention with adolescent students who are adequate word readers and low in reading comprehension impact reading comprehension outcomes?

The WJIII-PC was administered as a means of assessing students individually. According to the findings for the WJIII-PC, the multi-component reading intervention yielded no significant effects for reading comprehension. However, there may be a practical significance (g=0.36) that is useful in potentially determining future research. Visual inspection of posttest means (T, M=82; C, M=76) show a posttest difference of 6 standard score points in favor of the treatment condition. The varying skills that students must use to complete the WJIII-PC may have more closely mirrored the skills that were taught with the different components of the intervention.

The TOSRE is a timed measure of reading fluency that asks students to confirm or disconfirm statements while reading text. Because an emphasis on fluency was not part of the intervention, small differences in improvement between the treatment and comparison groups were expected. The findings for this measure show no differences in impact between the treatment and comparison condition. According to the findings for the TOSRE, the multi-component reading intervention yielded no significant effects for reading fluency.

For the GM-RT, there were statistically significant differences between the treatment and comparison condition at pretest in favor of the treatment condition. This was an unexpected finding since one GM-RT was part of the screening criteria for participation (standard score less than 93) and the groups were randomized prior to the beginning of the year. Further analysis indicated very low correlations between pretest and posttest scores (r=.51) for participants across both conditions, which could be an indication of unexplained measurement error. The raw scores were also analyzed, which indicated 11 participants across both conditions (Treatment, n=7;Comparison, n= 4) with raw score decrease of 5 points or more which is also an unexpected finding.

While these pretest differences were controlled statistically, it is nevertheless an unexpected finding. Perhaps in future research with relatively small samples, a stratified approach to random assignment would be preferred. It is possible that unexplained measurement error influenced the findings for this measure.

SUMMARY AND IMPLICATIONS

Overall the findings of this multi-component intervention that was aligned with the DIME model did not indicate effects favoring the treatment condition. However, the WJII-PC mean standard score differences between groups at posttest may be a meaningful finding of impact and suggesting the need for future research. Studies that do not yield significant findings can provide important contributions. While it may be personally disappointing, the findings from this study provide an opportunity to reflect upon possible explanations for the findings including the design of the study, and other factors that may help to explain the results.

The Direct and Inferential Mediation (DIME) model (Cromley & Azevedo, 2007) served as a primary influence guiding the development of the multi-component treatment. The DIME model hypothesizes relationships among background knowledge, inferences, reading comprehension strategies, vocabulary, and word reading. The direct and mediated effects of comprehension and the fit of the model were tested on 175 students in 9^{th} grade. The best fit of the model explained 66% of the variance in reading comprehension. Vocabulary and background knowledge made the largest contribution followed by inference, word reading, and strategies. The DIME model does not place emphasis on word reading or fluency, both of which have been identified as key components of reading. The sample of students used to develop the DIME

model consisted of a wide range (1st through the 99th percentile on the GM-RT) of reading comprehension proficiency (Cromley & Azevedo, 2007), and was more similar to the general population of students, rather than students with significant comprehension problems, such as those identified in this study. Despite participants for this study having adequate word reading compared to their comprehension, they still demonstrated instructional needs in word study and fluency.

Other recently developed interventions influenced by the DIME model have shown promise in improving reading outcomes for students participating in general education content area classes (Vaughn et al., in press). The sample for this study was selected from general education classes and is more representative of the sample used to develop the DIME model. The instruction for this intervention was framed within a text-processing view of comprehension and focused more directly on the content in the text as the vehicle for instruction (e.g., Applebee, Langer, Nystrand, & Gamoran, 2003; Beck & McKeown, 2006). The text-based instruction included the instructional supports of comprehension canopy, video clips, essential words, critical readings, short quizzes, and knowledge application activities. It is possible that some these instructional supports, while yielding improved outcomes for students in content area classes, may not yield improved outcomes for adolescent students with persistently low comprehension.

Hoover and Gough (1990) described a framework for reading of two components, decoding and linguistic comprehension referred to as the Simple View of Reading. The product of both components represents the skill of reading. Despite the efforts of this intervention study to identify students with adequate word reading and low comprehension, reading intervention teachers observed students having trouble

with pronunciation of multi-syllable words, sight words, and proper nouns during text-based reading. The two components of word reading and linguistic comprehension making up the Simple View of Reading may better represent the needs of the sample for this study based on observations during instruction. An intervention for adolescent students with low comprehension grounded in the simple view of reading would include one component of word study with goal of improving automaticity the word, phrase, and multiparagraph level. Interventions that align with the second component of linguistic comprehension might include instructional routines designed to build knowledge of concepts that are essential to the understanding of text. Further elements of a component to address linguistic comprehension might be text-based instruction, opportunities for students to briefly summarize main ideas after sections of text, and to answer comprehension questions that require integration of ideas found in different portions of the text. The Simple View of Reading may provide a theoretical basis for interventions that is more closely aligned with the needs of high school students with reading difficulties, when compared to the DIME model. The findings from this study in addition to the study of content area classes (Vaughn, Swanson et al., in press) supports the notion that the DIME model may be better suited to influence interventions designed for general education classes.

The multi-component intervention used in this study included five components, some of which contained multiple sets of discrete skills taught throughout the intervention. Reading intervention teachers reported difficulty with consistent completion of all the components. To assist with this difficulty, teachers began to set timers to assist in keeping track of the allotted time for each component to stay within the procedures outlined for fidelity of treatment. It appeared that students were not

given opportunities for sustained concentration and mastery of any one particular skill being taught due to the high number of components. Other multi-component interventions used with this age group have contained four components rather than five (Alfassi, 1998; Berkeley, Mastropieri, & Scruggs, 2011; Kim et al., 2006; Klingner & Vaughn, 1996; Vaughn, Klingner et al., 2011). On the surface, one additional component may not seem like a big difference. However, the discrete skills taught for three of the five components (grammar print structures, complex language structures, and inference training) required the use of short text that provided opportunities to practice those discrete skills. This limited opportunities for sustained periods of time dedicated to longer amounts of text. I hypothesize that the high number of components and specificity of discrete skills included in those components made it difficult for teachers to provide sustained durations of time for students to concentrate on the skills attempting to be developed through each component. In other words, by attempting to address several different instructional approaches to improve reading comprehension, the intervention did not provide opportunities for students to have sustained periods of concentration focused on text.

A second possible explanation is that the intervention for this study was not powerful enough to produce statistically significant effects. The instruction may not have been intense enough and the duration of one year may have been too short. Students who enter 9th grade with low reading comprehension may need multiple years of treatment throughout the remainder of high school as a means of remediating their difficulties with reading.

A third possible explanation is a potential impact of the socio-emotional factors faced by high school students with reading difficulties. The pressures students face in

high school are potentially much different than those faced in lower grades. Reading teachers reported concerns during team meetings that while students' behavior was appropriate in their intervention classes, students reported a high number of behavior referrals from other classes, in school suspension placements, and consistently low grades in content area classes. It may be that research studies designed to improve reading outcomes for students in high school would benefit from considering and measuring risk factors associated with students' socio-emotional needs and consider infusing principles of positive behavior support as part of the interventions.

LIMITATIONS

Despite the rigor of the randomized design, there are limitations based on the context in which the study is conducted. To participate, ninth grade students were asked to give up an elective period to work on an academic area that is difficult. For this reason, many students declined participation in the study. Students who chose to participate may not represent the pool of students with reading comprehension difficulties. .

The findings are limited by the difficulties with measurement of reading comprehension (Snow, 2003). Researchers have struggled with the development of measures that accurately assess reading comprehension. While measures of reading comprehension are designed to minimize the impact of prior knowledge on outcomes, it is possible that findings from these measures underestimate the influence of prior knowledge on the outcomes, especially for older readers where the expectations of prior knowledge increase (Snow, 2003).

A third limitation concerns the small sample size for the study and the resulting low power. Small differences between groups were difficult to detect based on the sample size. Larger sample sizes would increase the power to levels that may allow detection of small to moderate effects. Due to the limits of the intervention being offered as an elective, we were unsuccessful in increasing the sample size.

The selected screening criterion was an attempt to identify students with difficulties mostly associated with reading comprehension and less about word reading. Despite this effort, reading intervention teachers consistently reported students displaying difficulty with reading accurately multi-syllable words during oral reading. Because our goal was to focus on students with "pure" reading comprehension difficulties, we may have neglected to provide adequate instruction on word reading. This instruction could be accomplished through the use of timed word lists of common multi-syllable words as a means of further developing automaticity with reading.

IMPLICATIONS FOR PRACTICE

Since the findings from this study did not yield significant effects in favor of the treatment, practitioners should continue to review the current empirical base of knowledge about reading interventions for older struggling readers. The review of literature identified a number of interventions for practitioners to consider: summarization or main idea, self-monitoring tools, mnemonics, mapping, and questioning. Findings from the series of NICHD studies of intensive interventions for middle school students with severe reading difficulties (Vaughn et al., 2010; Vaughn, Wexler, Leroux et al., 2011; Vaughn, Wexler, Roberts et al., 2011) support reading interventions that provide a combination of explicit instruction in word reading and

cognitive strategy instruction in comprehension over an extended duration of time that includes multiple years of intensive interventions.

CHANGES OVER TIME IN ADOLESCENT READING INTERVENTION RESEARCH

In the Institute of Education Sciences (IES) 2005 Biennial Report to Congress, IES stated that its funding procedures favor rigorous research designs that emulate the type of randomized trials found in medical research. Furthermore, IES reported a 200 percent increase in the use of true experimental designs in government-funded projects between 2001 and 2004. More rigorous designs typically feature randomization, the use of standardized measures, longer interventions and larger sample sizes. As a potential result of these changes, a recent meta-analysis (Scammacca, Roberts, Vaughn, & Stuebing, in preparation) indicated that more recent studies (published after 2005) yielded a substantially smaller mean effect size of 0.49 when compared to the mean effect size of 0.95 reported for studies published between 1980 and 2004. For standardized measures of reading the mean effect size was 0.21, which was also much smaller than the 0.42 mean effect size reported for studies published between 1980 and 2004.

Scammacca et al., (in preparation) also reported a finding of shorter interventions having larger effects, which was also reported in a meta-analysis of reading interventions that provided at least 75 sessions to students in grades 4 through 12 (Wanzek et al., in review). While on the surface this negative relationship between effect size and hours of intervention appears to be counterintuitive, Willingham (2007, 2012) explanation claimed that brief reading comprehension interventions (5 hours or less) potentially produce a large immediate effect for students who are adequate

decoders, because reading comprehension strategies are easy to learn. Further, Willingham claimed that maintaining the early growth during a brief intervention requires students to maintain use of the strategies over a longer duration with varying types of texts that are different then the passages used to learn the strategies (similar to the passages used for standardized measures of reading comprehension). Willingham's theory, while not completely satisfying, provides a starting point for future research on the relative effects of brief and extensive interventions.

An additional factor that changes the landscape of reading intervention research with adolescents is recent legislative changes introduced through the *No Child Left Behind Act of 2001* and the *Individuals with Disabilities Education Improvement Act (IDEA) in 2004*. Both legislative acts contained language advocating for the use of evidence-based practices. More specifically, IDEA 2004 permitted schools to use a response to instruction (RTI) framework to identify students in need of special education services. More schools began to implement some forms of interventions to students who were not meeting grade level standards. This caused a profound change in the "business as usual" comparison condition in intervention studies. Both of these factors potentially play a role in changes in the recent estimates of the effects of studies that were published after 2005 (Scammacca et al., in preparation).

RECOMMENDATIONS FOR FUTURE RESEARCH

Future reading intervention research with adolescents should consider methods of documenting and reporting the nature of the comparison conditions in terms of interventions being provided in the schools. A better understanding of the comparison conditions could be used to better understand issues of dosage for different components

of interventions. Methods of conducting rigorous studies on single components interventions should be considered as a means of facilitating the potential structure of multi-component interventions. For example, an intervention component as complex as inference instruction, could be broken down into single components, and studied in more detail. Ways to make the connections between instruction on inferences and use of these skills during text reading needs to be further explored. Another example of a single component intervention to further study is the instructional practice of having students develop different question types during reading. This strategy may serve as scaffold to prepare struggling readers to understand how to develop complex connections between different parts of text and prior knowledge prior to explicit instruction on inferences.

While it appears that students in high school with difficulties understanding text, appear to need interventions that take place for multiple years, researcher need more information to investigate the phenomena of short interventions having large effect sizes. (Scammacca et al., in preparation). There are still questions about the correct dosage of intervention in the field of adolescent reading intervention research.

Stanovich (2009) book describes a compelling argument to define the construct of a "Rationality Quotient", or the notion that rationality and intelligence must be distinguished from each other. Potentially, Stanovich's work provides some interesting ideas as to how to promote reasoned thought processes with individuals through some exploratory studies. Some of the ideas discussed about critical-thinking and problem solving should possibly be considered for future research. For example, Stanovich (2009) describes methods of teaching individuals to improve their rational thought through instruction on alternative explanations, the principal of falsifiability, and the

language of memetics. The development of these skills for students as applied to complex issues that are engaging and grounded in text may have potential. Future interventions should continue to focus on areas of interventions that we have reasonable confidence in there effectiveness. There is reasonable evidence to support continued use of word level interventions for some adolescents with reading difficulties. The expectations of schools to provide instruction to improve students' level of content acquisition is increasing with the implementation of the Common Core Standards (CCS) in 2012. Intervention researchers may want to consider ways to simplify strategy instruction to increase the amount of instructional time focused on text, rather than too much time focused on completion of steps that are part of a strategy being taught. For example, for a main idea strategy, a simple prompt of "Tell me what this part is about?" placed between sections of text, rather than a multi-step strategy that requires the student to document their answer in writing may improve the amount of instructional time focused on reading text. This change will provide more time to allocated to text reading. Researchers may want to consider methods to document the dosage of text in a more detailed manner as a means to explore ways to maximize intervention intensity. Based on my observations during this study, it appeared that more opportunities for students to have sustained amounts of time to concentrate on text, think critically about the content, and engage in brief discussions to facilitate connections are all potential elements of interventions to consider for future adolescent reading research.

Appendix A: Synthesis code sheet

Chapter 2 Code Sheet

Study Information

Coder:
- ❑ Solis

Author:_____
Year: _____

Who funded the study? (p. _____)
- ❑ U.S. Department of Education
- ❑ School District
- ❑ University
- ❑ National Institute of Health
- ❑ Foundation
- ❑ State Funded
- ❑ Other
- ❑ Not reported/do not know

Participant Information

Age or grades of subjects as described in text: (p._____)

Risk type of subjects as described in text: (p. ____)

Design Information

Research Design:
- ❑ Treatment/Comparison
- ❑ Single group (pre/post, multiple treatments, etc.)
- ❑ Single Subject (Describe type) _____

Assignment/selection of students for intervention: (p. _____)
- ❑ Random
- ❑ Matched/paired
- ❑ Other
- ❑ Not reported/do not know

Is fidelity of treatment check reported? (p. _____)
- ❑ Yes
- ❑ No

Are pretest scores on any measure reported? (p._____)
- ❑ Yes
- ❑ No

Criteria provided for selection of participants: (p._____)

Treatment Information (report comparison/control on next page)

	Group 1	**Group 2**	**Group 3**
Group Name			
Number of participants (N=____)			
Age (p. ____)			
Grade (p. ____)			
Site of Intervention -School -Clinic -Home -Other (p.____)			
Role of Person Implementing the intervention -General Ed T -Special Ed T -Counselor -Speech/ language Therapist -Reading Specialist -Parent -Researcher -Uncertified Paraprofessional -Other specialist -Other (p.____)			
Length of each session (in minutes) (p.____)			

Duration of intervention (time between first and last session), in weeks
(p. ____)
Total number of sessions
(p. ____)
Frequency of sessions
(p. ____)
Readability Level
(p.) (ie GE, lexile)
Reading Material info
(ie, narr,expos,content)
(p.)

Comparison/Control Group Information

	Group 1	**Group 2**	**Group 3**
Group Name			
Number of participants (N=___)			
Age (p. ____)			
Grade			
Site of Intervention -School -Clinic -Home -Other (p. ____)			

Role of Person Implementing the intervention -General Ed T -Special Ed T -Counselor -Speech/Language Therapist -Reading Specialist -Parent -Researcher -Uncertified Paraprofessional -Other specialist -Other (p. ____)			
Length of each session (in minutes) (p. ____)			
Duration of intervention (time between first and last session), in weeks (p. _____)			
Total number of sessions (p. ____)			
Frequency of sessions (p. _____)			
Readability Level (p.) (ie GE, lexile)			
Reading Material info (ie,narr,expos,content) (p.)			

Identification of Intervention level/intensity

	Group 1	**Group 2**	**Group 3**
Group Name (ie T1, T2)			
Group Number			
Instructional Group Size			
Total hours of intervention per student			

Description of treatment as provided in text: (p. ____)

Commercial of research-based title of intervention: (p. ____)

Clarity of Causal Inference (Are treatment and comparison groups comparable

For studies using random assignment

Was there differential attrition between intervention and comparison groups?

- ❑ Yes
- ❑ No

Comments: _____
_____

Sample size of intervention group at start of study: (p. ____)
Group 1_____ Group 2_____ Group 3_____

Sample size of intervention group for the analysis of the outcome measure(s): (p. _____)
Group 1_____ Group 2_____ Group 3_____

Sample size of comparison group at start of study: (p. ____)
Group 1_____ Group 2_____ Group 3_____

Sample size of comparison group for the analysis of the outcome measure(s): (p. ____)
Group 1_____ Group 2_____ Group 3_____

Is there evidence groups experienced attrition for different reasons?

- ❑ Yes
- ❑ No

Comments:_____

For Quasi-Experimental Designs

Were adequate equating procedures used to recreate the selection model?

- ❑ Yes
- ❑ No

What characteristics of students or schools were used to equate groups? (p. ___)

a)_____
b)_____
c)_____
d)_____
e)_____
f)_____

When was equating of groups done? (p. ____) _____ _____

Was there differential attrition between intervention and comparison groups after equating occurred?

- ❑ Yes
- ❑ No

Sample size of intervention group at start of study: (p. ____)
Group 1_____ Group 2_____ Group 3_____

Sample size of intervention group for the analysis of the outcome measure(s): (p. ____)
Group 1_____ Group 2_____ Group 3_____

Sample size of comparison group at start of study: (p. ____)
Group 1_____ Group 2_____ Group 3_____

Sample size of comparison group for the analysis of the outcome measure(s): (p. ____)
Group 1_____ Group 2_____ Group 3_____

Is there evidence groups experience attrition for different reasons?

- ❑ Yes
- ❑ No

Comments:_____
_____
_____

Clarity of Causal Inference (Lack of Contamination)

Was there evidence of a local history event?

- ❑ Yes
- ❑ No

Were the intervention and comparison groups drawn from the same local pool? (defined as same district, city or county or region)

- ❑ Yes
- ❑ No

If yes, did study participants, providers, data collectors, and/or other authorities (e.g., parents, teachers, case managers) in either the intervention or comparison group, know who was in which condition?

- ❑ Yes
- ❑ No

Did the description of the study give any other indication of the plausibility of intervention contaminants?

- ❑ Yes
- ❑ No

Comments (Describe any if applicable):_____

_____

_____

Did the study measure the outcomes at a time appropriate for capturing the intervention's effect (within 2 weeks)?

- ❑ Yes
- ❑ No

Precision of Outcome: Effect Size Estimation (Were the effect sizes accurately estimated?)

Was the assumption of independence met? (no crossover into multiple groups by participants) (p. ____)

- ❑ Yes
- ❑ No
- ❑ Not reported

Was the assumption of normality met? (p. ____)

- ❑ Yes
- ❑ No
- ❑ Not reported

Was the assumption of equal variance met? (p. ____)

- ❑ Yes
- ❑ No
- ❑ Not reported

Were the sample sizes adequate to provide sufficiently precise estimates of effect sizes?

- ❑ Yes
- ❑ No

Comments:_____

Precision of Outcome: Statistical Reporting
(Were the statistical tests adequately reported?)

Were the sample sizes reported (or estimable) from statistical information present?

- ❑ Yes
- ❑ No

Could directions of effects be identified for important measure outcomes?

- ❑ Yes
- ❑ No

Could effect sizes be estimated for important measured outcomes?

- ❑ Yes
- ❑ No

If yes, could estimates of effect sizes be computed using a standard formula or its algebraic equivalent?

- ❑ Yes
- ❑ No

Number of Effect Sizes	Measure Name	Min Score	Max Score	Reliability Coefficients	Type	Validity

ES #	PG	Group 1	Group 2	G1 Mean	G1 SD	G1 (n)	G2 Mean	G2 SD	G2 (n)	Comp. Code	Direction of the Effect	Comments

Appendix B: Implementation Validity Checklist

Implementation Validity Checklist 2011-2012

Teacher: _____ Date: _____

Observer: _____
School:_____ Grade:_____

Period:_____ Number of Students:_____ Length of Observation:_____

Unit name, number, and emphasis:
_____

Unit Day in Lesson Cycle: ☐ 1 ☐ 2 ☐ 3 ☐4 ☐5

Procedural Fidelity & Quality of Implementation

Implementation: Criteria:	Quality Rating
5 - All or nearly all of the required elements and procedures	5 - High
4	4
3 - Approximately half of the required elements and procedures	3 - Average
2	2
1 - Expected required elements were not completed	1 - Low
NA=Component not required/expected for that day completed	NA = Component not

Notes about classroom:_____
_____
_____
_____
_____
_____

1) Essential Words: Explicit Vocabulary Overall Time:_____	**Implementation**						**Quality**					
	5	**4**	**3**	**2**	**1**	**N**	**5**	**4**	**3**	**2**	**1**	**N**
1. Introduce Essential Word(s): ☐ 1. Instructional routine utilized: student-friendly definition, visual representation, words used in context ☐ 2. Introduce or review words ☐ 3. Utilize CAL to write definitions ☐ 4. Turn and Talk (OR) ☐ 5. Provide Visual Representation (OR) ☐ 6. Take a Position ☐ 7. Uses iPads												

2) Text-based reading and GPS ***Overall Time:_____***	**Implementation**							**Quality**					
	5	**4**	**3**	**2**	**1**	**N**		**5**	**4**	**3**	**2**	**1**	**N**
1. During Reading- CAL & GPS (Days 1-4) ☐ 1. Prompts use of learning logs ☐ 2. Builds background knowledge for text ☐ 3. Prompts students to identify unknown words and use context clues: Look at the word, read around the word, and go back and reread the word ☐ 4. Integration of other components (Essential Words, GPS, CLS, Inference, & morphology) ☐ 5. Identify commas or quotes ☐ 6. Prompts students to develop who, what, when, where and why questions about text ☐ 7. Discuss, demonstrate, and guide students in identifying different types of referents within text													

Notes:

Complex Language Structures (CLS) 2-days ***Overall Time:_____***	**Implementation**					**Quality**					
1. Complex Language Structures (Day 1 & 3) ☐ 1. Model and prompt students to discuss characteristics of complex language (similes/metaphors/conjunctions etc.) ☐ 2. Review of the complex language ☐ 3. Facilitates supporting activity (single sentence, paragraph, bingo, fill-in-blank, literature, etc.)											
Notes:											

Inference Training	**Implementation**							**Quality**					
Overall Time:_____	**5**	**4**	**3**	**2**	**1**	**N**		**5**	**4**	**3**	**2**	**1**	**N**
1. Inference (Day 2-4) ☐ 1. Review: What is an Inference? Discuss reading with a purpose. ☐ 2. Give examples of inferences within text ☐ 3. Conduct 3-part expository text inference practice readers ☐ 4. Students read sentences and questions to determine fact or inference reasoning. ☐ 5. Prompts students to look for clues, use background knowledge, evidence, and come to a conclusion etc. ☐ 6. Students read paragraphs and questions to determine fact or inference reasoning. ☐ 7. Reinforce answering post-reading inferential questions with students justify and verifying their reasoning. ☐ 8. Students read a passage, read forward and backwards to figure out meaning with clues in the text. ☐ 9. Use a self-monitoring checklist for inference.													
Notes:													

In-Class Text Reading	
Text Utilized (Check all that apply)**:**	
☐ Textbook	☐ Newspaper/magazine
☐ Supplemental Text	☐ Other _____
Method of Text Reading (Check all that apply):	
☐ Teacher Read Aloud	☐ Choral Reading ☐ Round-robin (Whole Class)
☐ Individual Reading	☐ Partner Reading ☐ Small-group Reading
Length of Text Read: **Total amount of time reading text: _____min.**	

Instructional Strategies
☐ Activated or built background knowledge
☐ Taught new vocabulary
☐ Graphic organizers to present material
☐ Graphic organizers for students to fill in information
☐ Notetaking
☐ Study Guide
☐ Student open-ended question/response (oral or written)
☐ Student multiple-choice or fill in the blank question/response (oral or written)
☐ Student question generation about text or topic

In general, the number of students who remained on-task and engaged during this teacher's lesson was:	**Most Students (75-100%)**	**Many Students (50-74%)**	**Some Students (25-49%)**	**Few Students (0-24%)**

Overall, I consider this teacher's instruction to be:	**5**	**4**	**3**	**2**	**1**
Overall, I consider this teacher's classroom management to be:	**5**	**4**	**3**	**2**	**1**
GLOBAL OBSERVATIONS					

Appendix C: Parental Consent

CONSENT FORM

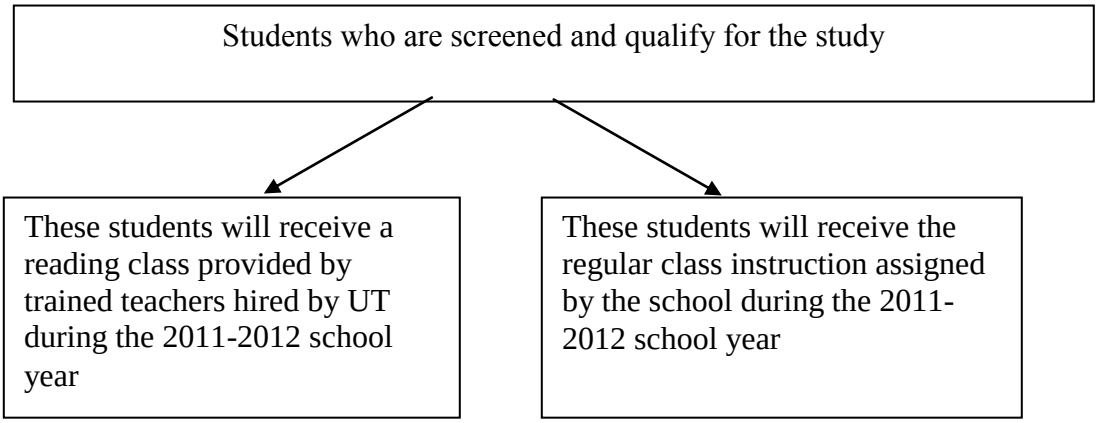
University of Texas Reading Comprehension Study

During the 2011-2012 school year Pflugerville Independent School District is working with a team of researchers at the University of Texas (UT) at Austin Meadows Center for Preventing Educational Risk on a study designed to investigate ways to improve students' ability to understand text. Your son or daughter is invited to participate in this study. This study is part of a program of research funded by the United States Department of Education Institute of Education Sciences, and the purpose of the study is to examine effective ways of teaching reading to older students who display a need for extra assistance with understanding of written text. We are asking for verbal permission to include your son or daughter in this reading study that will take place during the 2011-2012 school year (with initial assessment screening beginning this spring 2011). We expect to have up to 150 participants in the study.

One week from receiving this form you will receive a phone call from a Pflugerville Independent School District staff member to talk more about the study and ask you for verbal agreement of participation. If you provide verbal permission the following steps will occur:

1. Your son/daughter will also be asked to verbally agree during the phone call or at the beginning of the year prior to participation in any study activities indicating that he/she understands the study and that the/she agrees to participate.
2. Your son or daughter will participate in the initial assessment screening to determine if he/she meets the criteria for inclusion in the study. The screening will consist of one group administered reading comprehension assessment that takes approximately 40 minutes and one individually administered word reading assessment that takes approximately 3 minutes. The assessments will be conducted during the school day in your student's already scheduled reading or academic intervention time (i.e., CARE class or ESL Skill Builder). We will also collect information from the district to determine if your son/daughter failed any previously administered TAKS reading tests.

(a) After we determine who qualifies for the study, based on the screening data collected, we will randomly assign your son/daughter to: (a) UT provided reading class, or (b) typical school practice (whatever reading instruction the school would normally provide the student). We will notify you of this decision and a parent informational session to be held at your school in the next few weeks.



The UT provided reading class will be taught during one period during the students 9th grade year and will take the place of an elective class. The student will earn a grade for this class just as he/she would any other class. *Please note that the student will earn an elective credit to be used towards graduation for participation in this class.* We have an agreement with the high school counselors that they will help us schedule this class into your student's 9th grade plan. The UT reading class is designed to teach vocabulary and comprehension strategies to improve your son/daughter's ability to understand text, with a particular emphasis on upper level content area text that students will encounter in their English language arts, social studies, science, and math classes.

If the student is randomly assigned to typical school practice, he/she will be provided whatever typical reading instruction the high school would normally provide.

All students who are screened and qualify for the study, despite being assigned to the UT reading class or the typical school practice group, will be tested twice: once at the beginning and once at the end of their 9th grade year, by someone experienced in working with students your son/daughter's age. The tests will take approximately two class periods to administer. The tests will be similar to the screening assessments and will simply include additional group-administered and individually administered assessments that will allow us to track your son or daughter's progress in the areas of reading comprehension, vocabulary knowledge and word reading ability. A time will be selected so that it does not require your student to miss any important information. For example, students in the reading class will be assessed only during the reading class time and students in the typical school practice group will be assessed only during another elective period or a time that is convenient for the student and teachers.

Only you, the child's parents, and appropriate school officials, will have access to the results of this testing. Nobody else will be given this information. To ensure confidentiality, your child's name will be removed from all test forms and replaced by a

number. Further, we will keep all project information in our locked offices at the University of Texas at Austin. Following the completion of the study, all materials will be destroyed. Only summarized group information will be used in reports of our study, so that your child's name will never be identified. His or her responses will not be linked to his or her name or your name in any written or verbal report of this research project. Authorized persons from the University of Texas at Austin and members of the Institutional Review Board have the legal right to review the research records and will protect the confidentiality of those records to the extent permitted by law.

We see no risk associated with your son or daughter's participation and your son or daughter may benefit from receiving specific instruction on reading comprehension and vocabulary strategies that may help your son/daughter access and understand text needed to learn content area information in the areas of English/language arts, social studies, science and math.

Your child's inclusion of data in this study is entirely voluntary. You are free to stop participation in this research study at any time. If you wish to stop your participation in this research study for any reason, you should contact **Dr. Greg Roberts** at the University of Texas at **(512) 232-2357.** Her email is meadowscenter@austin.utexas.edu. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.

Your decision to allow your son or daughter's to participate in the study will not affect your or his or her present or future relationship with The University of Texas at Austin or with the school district. If you have any questions about the study now or later, please contact Dr. Sharon Vaughn at (512) 232-2357. Her email is meadowscenter@austin.utexas.edu. If you have any questions or concerns about your son or daughter's participation in this study you may contact Dr. Jody Jensen, Chair of The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, (512) 232-2685 or email: orsc@uts.cc.utexas.edu.

Thank you very much for your interest. We look forward to working with you and your son/daughter. Please keep this consent form for your records. A Pflugerville staff member will call you in a week to talk more about the study and ask for verbal permission of participation.

We ask that you also discuss the attached green assent form with your son/daughter. Your son/daughter must verbally agree participate in the study.

Thank you for your interest in this study. We look forward to working with you and your son or daughter. Please keep this copy for your records and to refer to when you receive the follow up phone call next week.

Sincerely,

Greg Roberts, Ph.D.
The University of Texas at Austin
E-mail: meadowscenter@austin.utexas.edu
Phone: (512) 232-2357
Fax: (512) 232-6033

Forma de Consentimiento

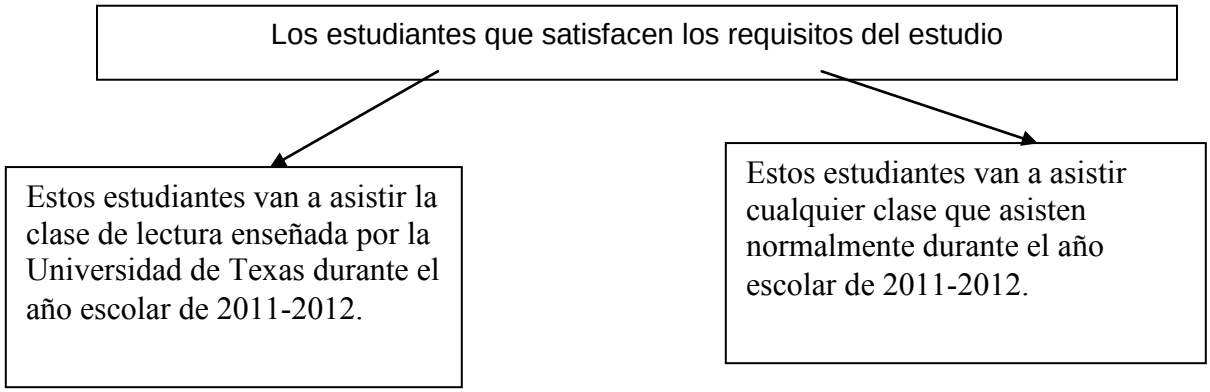
La Universidad de Texas en Austin: Investigación de Comprensión de Lectura

Durante el año escolar de 2011-2012, el distrito de Pflugerville va a participar en una investigación con el Meadows Center de la Universidad de Texas en Austin. La investigación va a examinar las maneras en que se pueda mejorar la comprensión de texto en los estudiantes mayores. Su hijo/a está invitado a participar en este estudio de investigación. Este estudio forma parte de un programa de investigación financiado por el Instituto de Ciencias Educativas (Institute of Educational Sciences) para poder estudiar las maneras efectivas de enseñar lectura a los estudiantes mayores que necesitan ayuda con la comprensión de texto escrito. Estamos pidiendo permiso para incluir a su hijo/a en la investigación durante el año escolar de 2011-2012 (su hijo/a va a tomar unas pruebas preliminares esta primavera de 2011). Espero tener hasta 400 participantes.

Si Usted toma la decisión de permitir que su hijo/a participe en esta investigación, usted está de acuerdo con las siguientes condiciones:

1. Antes de participar, su hijo/a necesita firmar una forma de participación que indica que sí entiende el propósito del estudio y que sí quiere participar.
2. Su hijo/a va a tomar unas pruebas preliminares durante la primavera para ver si su hijo/a cumple los criterios del estudio. Las pruebas incluirán un examen de comprensión de lectura que toma aproximadamente 40 minutos y se la administra con el grupo. También, su hijo/a necesitará tomar una prueba de comprension de palabras que toma aproximadamente 3 minutos y se la administra individualmente. Su hijo/a va a tomar las pruebas durante su clase de lectura o intervención académica (por ejemplo clase de CARE o clase de ESL). También, vamos a pedir información del distrito de Pflugerville para determinar si su hijo/a en los años pasados no pasó cualquier examen de lectura de TAKS.

(a) Después de que determinamos quien satisface los requisitos, basado en los resultados de las pruebas preliminares, vamos a asignar a su hijo/a a: (a) clase de lectura ensenada por la Universidad de Texas (clase de lectura de UT), o (b) clase normal (cualquier clase que asiste su hijo/a normalmente). Le vamos a dar esta información a Usted y también en las próximas semanas tendremos una reunión para todos los padres que tienen un/a hijo/a en el estudio.



Se la va a enseñar la clase de lectura de UT durante la clase en el noveno grado de los estudiantes y va a tomar el lugar de una clase electiva. El estudiante va a sacar una nota como si fuera una clase normal. ***El estudiante va a ganar un crédito electivo para esta clase que cuenta para graduación.*** Tenemos un acuerdo con los consejeros de la escuela y van a ayudarnos a incluir la clase de lectura de UT en el horario de los estudiantes. La clase de lectura de UT va a enseñar estrategias de aprendizaje de vocabulario y comprensión de texto para mejorar la habilidad de comprender texto de su hijo/a. Hay una énfasis particular en la área del contenido superior que los estudiantes van a encontrar en las clases de arte de lenguaje Inglés, estudios sociales, ciencias, y matemáticas.

Si le asignó con selección al azar el estudiante a cualquier clase que asiste normalmente, él/ella va a recibir la instrucción de lectura que la escuela se da normalmente.

Todos los estudiantes que satisfacen los requisitos preliminares, a pesar de que están en la clase de lectura de UT o en la clase normal, van a tomar pruebas dos veces durante el año escolar de 2011-2012. Las pruebas duraran aproximadamente dos periodos de clase. Las pruebas son similares a las pruebas preliminares e incluirán pruebas adicionales de comprensión de lectura y vocabulario con el grupo, y comprensión de palabas que se toma individualmente. Las pruebas nos permitirán ver el progreso de su hijo o hija en las áreas de comprensión de lectura, el conocimiento de vocabulario y la comprensión de la materia en la clase.

Sólo usted, los padres del niño, y los profesores tendrán acceso a los resultados de estas pruebas. Nadie más vera esta información y no será parte de las calificaciones del niño. Para asegurar confidencialidad, el nombre del niño se quitará de todas las pruebas y será reemplazado por un número. Todos los participantes permanecerán anónimos y todas las pruebas serán guardadas en las oficinas de la Universidad de Texas. Cualquier información que se obtenga con respecto a este estudio y que se pueda identificar con su hijo o hija será confidencial y será revelado sólo con su permiso. Las respuestas no serán ligadas a ningún nombre en ningún informe escrito ni verbal de este proyecto de investigación. Las personas autorizadas de la Universidad de Texas en Austin y miembros de la Tabla Institucional de la Revisión tienen el derecho legal de revisar los registros de investigación y proteger la confidencialidad de esos registros hasta el punto permitido por la ley.

Nosotros no vemos riesgo asociado con la participación de su hijo o hija, y su niño puede beneficiarse de la instrucción relacionada con las estrategias de la comprensión y el vocabulario de sus materias.

Para utilizar los datos de su hijo/a en este estudio es totalmente voluntario. Usted puede parar la participación de su hijo en este estudio de investigación cuando usted guste. Si usted desea parar la participación de su hijo en este estudio de investigación por cualquier razón, usted debe llamarle **Dr. Greg Roberts** a la Universidad de Texas al **512-232-2357** o **meadowscenter@austin.utexas.edu .** A través del estudio, los investigadores le darán información nueva que resulte de la investigación y pueda influir en su decisión para dejar a su hijo quedarse en el proyecto.

Su decisión de permitir los resultados de las pruebas de su hijo/a no afectará sus relaciones futuras con La Universidad de Texas en Austin o con el distrito. Si usted tiene alguna pregunta acerca del estudio, por favor de llamar a **Dr. Greg Roberts** al **512-232-2357, meadowscenter@austin.utexas.edu** . Si usted tiene una pregunta sobre la participación de su hijo/a en este estudio, llame a la Profesora Jody Jensen, Presidente del Comité de Revisión Institucional para la Protección de Participantes en Investigaciones con Humanos de la Universidad de Texas (Institutional Review Board for the Protection of Human Research Participants) al (512) 232-2685 o orsc@uts.cc.utexas.edu .
A pesar de que usted se permita participar o no su hijo/a en la investigación, vamos a entrar su hijo/a en un concurso con la oportunidad a ganar un IPOD Nano si: (a) usted firma la forma pegada de color amarilla, y (b) su hijo/a le devuelve la forma a su maestro/a. Lo vamos a anunciar el ganador/la ganadora del concurso después de cumplir todas las pruebas preliminares. Si su hijo/a devuelve la forma pegada con la firma apropiada el próximo día después de recibir la forma, su hijo/a recibirá **5** boletos para el concurso. Si su hijo/a devuelve la forma pegada con la firma apropiada dos días después de recibir la forma, su hijo/a recibirá **4** boletos para el concurso. Si su hijo/a devuelve la forma pegada con la firma apropiada tres días después de recibir las formas, su hijo/a recibirá **3** boletos para el concurso. Si su hijo/a devuelve la forma pegada con la firma apropiada cuatro días después de recibir las formas, su hijo/a recibirá **2** boletos para el concurso. Si su hijo/a devuelve la forma pegada con la firma apropiada **5** días o más después de recibir las formas y antes de anunciamos el/la ganador/a, su hijo/a recibirá **1** boleto para el concurso. Será solo un/a ganador/a por cada escuela.
Por favor, le pedimos a Usted a discutir la investigación y la forma pegada de color verde con su hijo/a. Para que participe su hijo/a en la investigación, Usted necesita firmar la forma pegada de color amarilla Y su hijo/a necesita firmar la forma pegada de color verde Y su hijo/a necesita devolverle las dos formas a su maestro/a.
Muchas gracias por su interés. Esperamos trabajar con Usted y su hijo/a. Usted puede guardar esta copia de la forma del consentimiento.
Sinceramente,

Greg Roberts
La Universidad de Texas en Austin
Correo electrónico: meadowscenter@austin.utexas.edu
Phone: (512) 232-2357
Fax: (512) 232-6033

Usted está tomando una decisión sobre permitir que su hijo o hija participe en este estudio. Su firma abajo indica que usted ha leído la información proporcionada arriba y ha decidido **PERMITIR** que él o ella participe en este estudio. Si usted decide más adelante que usted desea retirar su permiso para que su hijo o hija participe en el estudio, simplemente dígame. Usted puede terminar la participación de su hijo o hija en este estudio en cualquier momento.

_____
Nombre de Hijo o Hija

_____ _____
Firma de Padre (Padres) o Guardián Fecha

_____ _____
Sharon Vaughn, Ph.D. Investigadora Fecha

****

Usted está tomando una decisión sobre permitir que su hijo o hija participe en este estudio. Su firma abajo indica que usted ha leído la información proporcionada arriba y ha decidido **NO** permitir que él o ella participe en este estudio.

_____
Nombre de Hijo o Hija

_____ _____
Firma de Padre (Padres) o Guardián Fecha

_____ _____
Greg Roberts, Ph.D. Investigadora Fecha

Appendix D: Student Assent

ASSENT FORM

University of Texas Reading Comprehension Study

I agree to be in a study trying to help me understand text better, especially text related to English language arts, science, social studies, and math. The person in charge and a school staff member, such as my teacher, explained this study to me. The only people who will know about what I say and do in the study will be the people in charge of the study, my teachers and counselor, my principal, and my parent or guardian.

I understand that by signing this paper, I will take some tests that will determine if I *do* or *do not* qualify for the study. I understand that my parents have already given their permission for me to be in the study. I understand that if I do qualify for the study I *may* or *may not* be asked to be in a reading class next year for the whole school year. I understand that I will get a grade for this class like my other classes, I will earn an elective credit for the class, and the class will be taught by a UT researcher who will be supported by my high school. The teacher of the reading class will help me try to learn how to become a faster reader and understand what I am reading. The teacher will work with me every day we have this reading class period to read and understand the meaning of the upper level content area (ELA, science, social studies, math) text, the vocabulary words, my textbooks, and she/he will help me learn how to spell and write better.

Writing my name on this page means that the page was read by me, or to me, and that I agree to be in the study. I know what will happen to me. If I decide to quit the study, all I have to do is tell the person in charge. My decision to participate will not have any negative effects on my relationship with the school.

_____ _____

Child's Signature Date

_____ _____

Signature of Researcher Date

CONSENTIMIENTO A PARTICIPAR EN UN ESTUDIO DE INVESTIGACIÓN

La Universidad de Texas en Austin: Investigación de Comprensión de Lectura

Estoy de acuerdo de participar en una investigación cual me ayudará comprender texto mejor, especialmente los textos que se usan en las clases de artes del lenguaje Inglés, estudios sociales, ciencias, y matemáticas. La persona encargada de esta investigación y un empleado de mi escuela (como mi maestra) me explicaron esta investigación. Los únicos que sabrán lo que yo digo y hago en esta investigación serán los encargados de este estudio, la directora de esta escuela, y mis padres o guardianes.

Escribiendo mi nombre en esta página significa que voy a tomar unas pruebas que dicen si satisfecho los requisitos de la investigación. Entiendo que todavía mis padres me dieron su permiso de participar. Si soy parte de la investigación, es posible que tenga que asistir una clase de lectura cual durará un año escolar. Entiendo que voy a sacar una nota en esta clase como mis otras clases. Entiendo que ganará un crédito electivo para esta clase y la clase se va a enseñar por un/a maestro/a de la Universidad de Texas en Austin que será apoyado por mi escuela. La maestra/el maestro de la clase de lectura me ayudará a leer más rápido y a entender lo que estoy leyendo. La maestro/el maestro trabajará conmigo todos los días en lectura y me ayudará entender vocabulario, leer mis libros y novelas que leo en clase. También me ayudará a deletrear y escribir mejor.

Escribiendo mi nombre en esta página significa que yo leí esta página, ó que me la leyeron, y que estoy de acuerdo de ser parte de esta investigación. Yo entiendo lo que me sucederá. Si yo decido dejar de ser parte de esta investigación, todo lo que tengo que hacer es decirle a la persona encargada. Mi decisión de participar no tendrá ningún efecto negativo con mis relaciones con la escuela.

_____	_____
Firma del Estudiante	Fecha
_____	_____
Firma del Investigador	Fecha

Appendix E Verbal Consent Telephone Script

Verbal Consent – Phone Script

Hello, may I speak to [parent name]. *I am* [insert district personnel name] *a Pflugerville Independent School District employee. I obtained your phone number from* [insert school name]. *I am calling you today to make sure you received the information about a research study being conducted by the University of Texas. This study is designed to learn more about reading comprehension for 9th grade students. Your child has been identified to potentially participate in the study. As part of the study, your child will be administered a couple of tests that will take about an hour. Children who are selected for the study will be randomly assigned to either participate in a reading class designed to improve their reading comprehension or participate in the classes that are already offered by the school. Students selected for the reading class will be taught strategies and content designed to improve their reading comprehension. Reading instruction will be provided in small groups by teachers that are trained and supervised by staff at the University of Texas.*

There are minimal risks involved in participating in the study. The benefits from participating in the study are the potential opportunity for your student to receive specialized reading instruction designed to improve his/her reading comprehension. The alternative to participating is that your student will attend classes currently offered by the school.

All study records that can identify your student will be kept confidential by removing all personal identifiers and storing any data collected on secured computers at UT. The results of the study may be published but your child's name will not be known.

Your child's participation in the study is completely voluntary. He/she can withdraw at any time. Choosing not to be in this study or to stop being in this study will not result in any penalty to your child, loss of any benefits to which they may be entitled, and will not negatively affect any of their rights to which they are otherwise entitled.

If you have any questions, you should call us promptly. Dr. Greg Roberts is the person in charge of the research study and he can be reached at 512-232-2320. Questions about your rights as a research subject may be directed to the Institutional Review Board at The University of Texas at Austin, 512-471-8871.

Do you have any questions?

Do you give permission for your child to participate?
[If yes, then continue. If no, thank the parent for their time and end the call]

Please speak to [insert child's name] *about the study and determine if he/she agrees to participate. If so, please have the* [insert child's name] *sign and return the form that was mailed at the beginning of the school year. Thank you for taking time to learn more about the research study.*

Verbal Consent – Telephone Script--Spanish

¿Hola? Quisiera hablar con (nombre del padres). Soy (nombre del empleado) con el distrito de Pflugerville Independent School District. (Nombre de la escuela) me dio su número de teléfono y quería saber si usted recibió la información sobre un estudio de investigación que se llevó a cabo de la universidad, The University of Texas at Austin. Este estudio está diseñado para aprender más sobre la comprensión de lectura para estudiantes del noveno grado. Su hijo ha sido identificado como un potencial de participar en este estudio. Como parte de este estudio, su hijo será administrado un par de pruebas durará aproximadamente una hora. Los niños que son seleccionados para participar en el estudio se asignaron aleatoriamente a participar en una lectura clase diseñado para mejorar su comprensión de la lectura o participar en las clases que son ya ofrecidos por la escuela. Los estudiantes seleccionados para la lectura de clases se impartirán contenidos y las estrategias destinadas a mejorar su comprensión de lectura. Enseñanza de la lectura será siempre en pequeños grupos por parte de los maestros que están formados y supervisados por los empleados de la universidad, The University of Texas at Austin.

Hay muchos riesgos que se corren en participar en este estudio, pero uno de los beneficios de participar en este estudio es la oportunidad para que su hijo se le asigna a la lectura clase especializada con enseñanza de la lectura diseñado para mejorar su comprensión de la lectura. La alternativa a participar es que el estudente deberá asistir a las clases ofrecidas actualmente por la escuela.

Todos los registros que puede identificar su hijo será tratada de manera confidencial por eliminar todos identificadores personales y almacenar cualquier información sobre las operaciones garantizadas en la universidad, The University of Texas at Austin. Los resultados del estudio pueden ser publicados, pero el nombre del niño no se dará a conocer.

Participación de su hijo en esta investigación es completamente voluntaria. Él / ella puede retirarse en cualquier momento. La elección de no participar en esta investigación, o dejar de participar en esta investigación no afectará negativamente a la pérdida de los beneficios a que puede ser su derechos de su hijo, o afectará ninguno de los derechos de su hijo.

<u>¿Tiene alguna pregunta?</u>

Preguntas sobre los derechos de su hijo como un tema de investigación pueden dirigirse a la officina de Institutional Review Board en la universidad, The University of Texas at Austin, (512) 471-8871. Pero, si tiene alguna pregunta después, por favor llame al Dr. Greg Roberts, como él es la persona encargada del estudio de investigación y el número de telefónico de la oficina es (512) 232-2320.

¿Le dará permiso a su hijo para participar en el estuido?

[Si dese así, continuar. Si no, gracias a los padres por su tiempo y cerrar la llamada.]

Por favor hable con (insertar el nombre del niño) sobre el estudio y determinar si él / ella está de acuerdo en participar. Si es así, por favor haga que hablar conmigo para que yo pueda pedir y que estén interesados en participar en esta investigación.

Gracias por tomarse el tiempo para aprender más sobre el estudio de investigación.

Nota permiso de los padres en la revista de teléfono

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Vita

Michael R. Solis was born in Fayetteville, AR the son of Carlos Enrique Solis and Betty Ann Delzell Solis. After completing his high school diploma from Fayetteville High School, Fayetteville, AR, in 1988, he entered the University of Arizona in Tucson, Arizona. He received his Bachelor of Arts from the University of Arizona in Communication and Journalism in December, 1993. Michael worked in the field of marketing and advertising for U S WEST and AT&T and was self-employed for three years. In 1998, Michael was employed in the Flagstaff Unified School District as a paraprofessional and entered Northern Arizona University in Flagstaff, Arizona to work on his teacher certification. He received his Master of Education in special education in August of 2002. Michael was employed by the Williams Unified School District in Williams, Arizona from 2001 to 2003 as an elementary special education teacher. In 2003, Michael was employed as a middle school special education teacher at West Sedona School, Sedona, Arizona. After two years, Michael took a position at West Sedona School as a Literacy Coach for three years. In the fall of 2008, he entered the Special Education Doctoral program at The University of Texas at Austin. For the next several years, he worked on his degree and gained extensive research experience working on various projects through The Meadows Center for Preventing Educational Risk.

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